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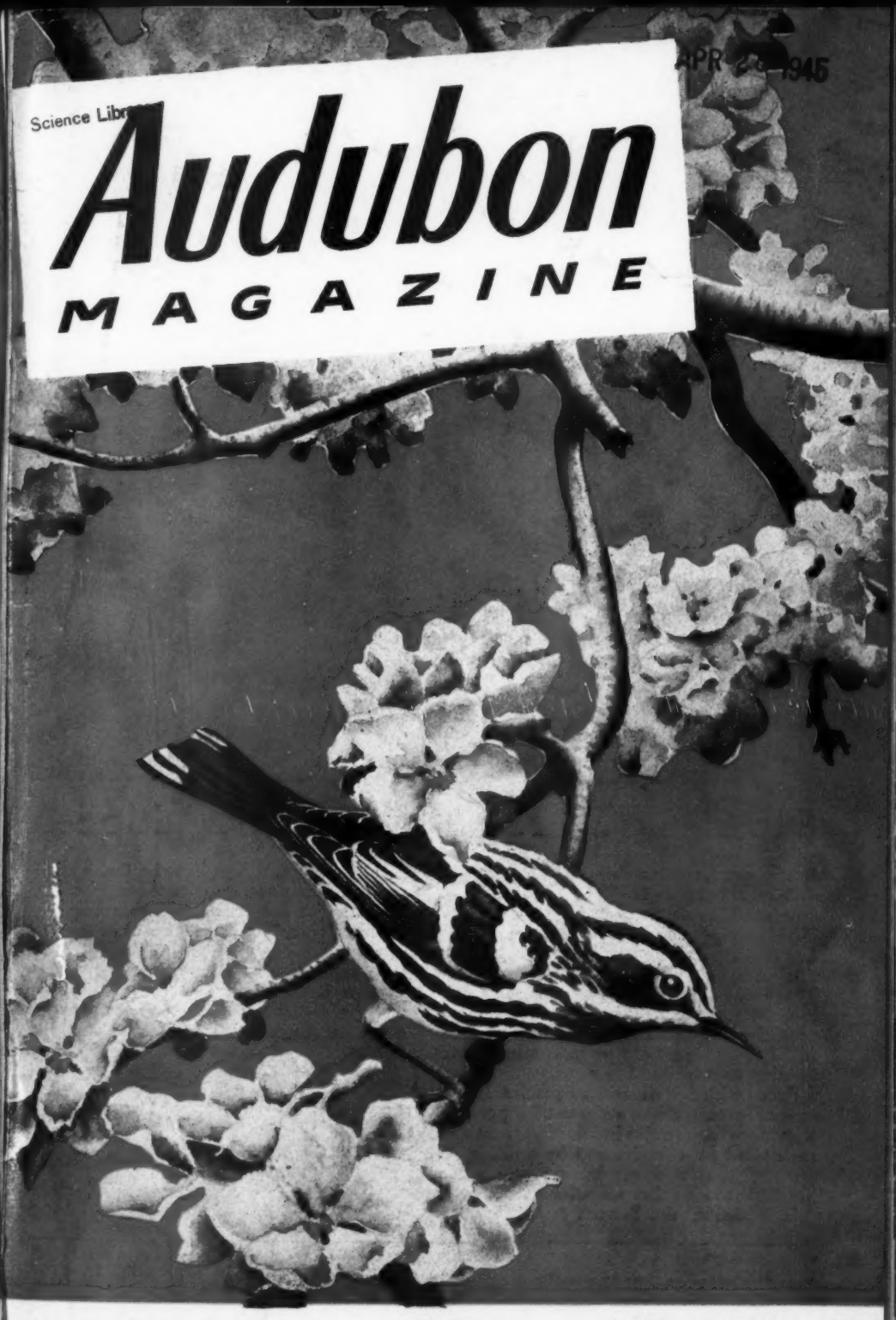

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A BIMONTHLY MAGAZINE DEVOTED TO THE PROTECTION AND PRESERVATION OF OUR NATIVE WILDLIFE

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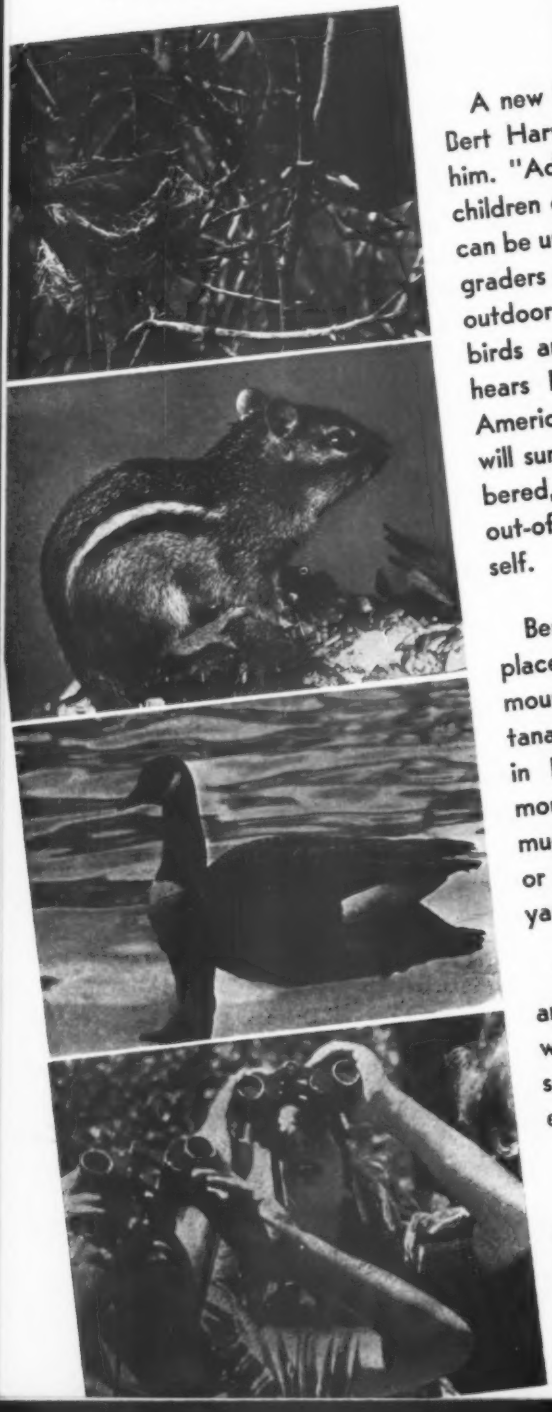
"Adventures in Nature"



A new film for children taken in 1945 by Bert Harwell and presented personally by him. "Adventures in Nature" is designed for children of junior high school age down and can be understood and enjoyed even by first graders so filled is it with the fun of being outdoors among nature's friends—flowers, birds and other animals. Every child who hears Bert Harwell whistle the songs of America's birds so beautifully and accurately will surely learn a lesson long to be remembered, a lesson of the appreciation of the out-of-doors, its value to man and child himself.

Bert Harwell's adventures in nature take place in many spots in America, from the mountains of the Blackfoot Indians in Montana to the swamp homes of the Seminoles in Florida. Exploring national parks for mountain goats, bears and birds will be as much fun as wading the bayous of the South or peering into the nests of birds in back yards.

"Adventures in Nature" is filled wit amusing antics of wild things. It is replet with the beauties of nature in bloom and song, in bloom as caught by the color ca era, and in song as whistled by Bert Harwe

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Oven-bird by Hal H. Harrison

With the blossoming and expanding greenery of spring, we see everywhere—in the door-yard, orchard and woodland—

The Wood Warblers

By James Bond

IN THE field of bird migration nothing is more dramatic than a May "wave" of warblers. Our trees and shrubbery suddenly seem to be alive with these lovely little birds just returned from their winter homes in the Tropics. In a surprisingly short time, the ardent birder can see, if not distinguish, some twenty species. In our Middle Atlantic States it is possible to find as many as thirty species in a single day, although you could barely hope to reach this figure.

In spring, almost all our warblers are in full nuptial plumage and many are in song. At this season, they exhibit a joyousness that is lacking when the silent hosts return in the autumn.

Most of us first become acquainted with warblers as spring transients. Later, we give way to the urge to follow them to their nesting grounds where a more intimate knowledge of the various species can be acquired. In North America, most warblers summer in the Canadian Zone where, in suitable localities, as many species may be seen in a day as during a good warbler "wave" in May. Ship Harbor, on Mount Desert Island in Maine, is such a spot, and here, in early June, we find in quick succession the redstart, magnolia, black-throated green, myrtle, parula, chestnut-sided, Nashville, Canada and black and white. In the high spruce woods we hear the lisping songs of the Cape May, bay-breast and Blackburnian, in the alder swales the rapid chippering of the Wilson's and Tennessee, and in the open sphagnum bog nearby we shall surely see the yellow-throat and yellow palm warbler. All of these species nest within a mile of Ship Harbor, while others are found not far away—the yellow warbler in the villages, the northern water-thrush about some beaver flowage, the oven-bird and black-throated blue in the deciduous woods of the interior and, finally, the blackpoll in the low spruce of the Duck Islands, less than five miles distant.

At such localities as Ship Harbor, it is interesting and instructive to search for warbler nests. The discomfort involved in exploring the mosquito-infested woods and swamps is immediately forgotten when one is discovered. We are now able to study the birds intimately, but care should be taken not to disturb the nest, or the surrounding foliage, which might

What the dull brown Swainson's warbler lacks in the gay plumage of his clan, he makes up in brilliant song. Once thought to be shy birds restricted to southern cane brakes, they have now been found breeding at 2000 feet on West Virginia's wooded mountains.

S. A. Grimes

cause the parents to desert or attract the attention of a marauder. Small and well hidden, the nests are difficult to find at first. With experience, we become familiar with the characteristics of the site and construction of the nest of each particular species, and then, more and more often, we are able to go directly to the right spot.

North American warblers may be divided roughly into two groups—those that nest on the ground and those that nest in trees or bushes. The former are for the most part of Central American origin, whereas most of the latter were apparently derived from the West Indies. Thus the tree-nesting *Dendroicae* winter largely in the Antilles, although some pass on to South America, whereas the ground-nesting *Vermivorae* winter in Central America. Incidentally, so far as is known, all resident Antillean warblers nest above the ground, most of the Central and South American species nest on the ground.

There can be little doubt that the wood warblers, a family comprising some 115 species and entirely confined to the New World, originated in Middle America, since all the 25 genera are found there either as indigenous species or as winter residents. On the other hand, only six genera breed in South America and of these *Dendroica* has merely a toehold on that continent. As many as 16 genera, including 54 species, breed in North America.

The relationship of the family lies with the nine-primaried finches and tanagers rather than with the ten-primaried Old World warblers, which are akin to the thrushes. The resemblance is thus purely superficial, although the *Sylviidae* fill the same ecological niche in Europe as do the *Parulidae* in North America. As a general rule Old World warblers are dull in color but superlative songsters, whereas our wood warblers are brightly colored but poor singers. The *Sylviidae* are represented in the New World mainly by the kinglets and gnatcatchers, which, however, are not typical of this family.

It is important to learn the songs of our warblers. These range from the weak, inarticulate notes of the bay-breast to the loud, ringing melody of the yellow-throated warbler. But once these songs are learned, they are not easily forgotten, although an occasional variation will be confusing. I have noticed that the "wichity" of our Pennsylvania yellow-throats becomes "wichawichity" in Maine. There is a more striking difference between the songs of the black-poll warbler on its breeding grounds in southeastern Canada as compared with those of transients in the Philadelphia region. Future field studies may show that most of the latter are individuals that nest in northern Canada. Those that breed in the White Mountains possess a third type of song.

In the high spruce woods the male bay-breasted warbler feeds his offspring. In autumn this species is so similar to the black-poll warbler, that it gives bird students an annual headache.

Allan D. Cruickshank

Eliot Porter

The wiry deliberate song of the black-throated green warbler comes from the cool darkness of the spruce woods where he tends his family.

In addition to the familiar territorial songs, some warblers (e.g. the prothonotary, oven-bird and yellow-throat) have "whisper" songs. These are sung by the males during the nesting season and perhaps play some part in courtship. They differ completely from the normal songs and are always very soft and rather canary-like in character.

Again, certain species (e.g. the water-thrushes, oven-bird and yellow-throat) utter what are known as "flight" songs—rapturous outpourings of notes emitted for the most part above the tree tops during the night. In character they are usually a mixture of the territorial and whisper songs.

In New England, warbler singing is at its height during the first half of June, that is to say during the incubation period. By late July the woods are virtually silent and the autumnal migration has begun. Now is the time that the true warbler addict is afield, for you have to be very discerning to identify the young in their first fall plumage, and even the adults of many species are different in appearance from what they were during the spring months. For it must be remembered that all our warblers undergo two moults a year, a pre-nuptial moult when there is a new growth of body feathers, and a post-nuptial, complete moult after the nesting season. As a general rule, where the sexes differ in nuptial plumage, the adult male resembles more or less the adult female in fall plumage, a notable exception being the black-throated blue warbler; but where the sexes are similar in spring they are also virtually alike in autumn. In most cases the young bird has acquired by its first spring the appearance of its parents, but the male redstart does not attain his gaudy reddish orange coloring until just before his second breeding season.

By late autumn almost all of our warblers are in the Tropics, although a few hardy species remain with us throughout the year. The pine warbler winters almost entirely in the southeastern United States, while numerous myrtle warblers brave the northern winter, particularly in places where there are bayberry bushes which offer an abundance of food, for warblers are not entirely dependent on insects, seeds being frequently eaten in the West Indies.

The migrations of several species are very extended. The black-poll warbler, for example, breeds as far north as Alaska and winters in northern South America, flying directly across the Caribbean Sea. The cerulean warbler has been found in northwestern Bolivia, the Connecticut warbler in southwestern Brazil. Comparatively little is known concerning the migration route of the latter, since there are as yet no records of transients from the Antilles or Central America.

Warblers, like the majority of our birds, are essentially night migrants, spending the daylight hours feeding and resting. However, over the Caribbean Sea they are often forced to fly by day. I have frequently seen flocks of these little birds struggling against a stiff breeze north of Cuba or over the Caribbean Sea. Always they were within a few feet of the water to avoid the full force of the trade wind. Yet there can be no doubt that the great majority reach their destination.

Hurricanes, the season for which coincides with the autumnal migration, would cause great havoc among the migrating hosts, but one wonders if birds sense the approach of such storms, causing them to delay their flights. A springtime ice-storm in

Alfred M. Bailey

The widely distributed and handsome little Wilson's warbler, known by the more appropriate name of pileolated (i.e., capped) warbler in the West, spends its winters south of our border.

more northern climes will sometimes overtake a "wave" of warblers, thousands of which will be killed. This may result in a temporary, local scarcity of these birds.

The winter homes of our warblers are often quite circumscribed. Thus, Kirtland's warbler, which breeds in Michigan, winters only in the Bahama Islands, Bachman's warbler only in the western half of Cuba and on the Isle of Pines. The western palm warbler is the most abundant bird in Cuba during this season, although it is very rare in Puerto Rico and unknown from the Lesser Antilles. On the other hand, the redstart and black and white warbler have a very extensive winter range.

The term "winter resident" is not strictly correct, since most of our warblers reach their wintering grounds in late summer and some even in early summer. I have had the opportunity of awaiting their arrival in the West Indies. The first to appear are the Austral Zone species, those that breed in the southeastern United States. For as soon as their broods are fledged warblers return to their ancestral homes, where they live together, apparently in perfect harmony. It is a very different matter on their nesting grounds, where every individual male requires a "territory" from which all other males of the species are excluded. In winter, warblers "chip" constantly but rarely sing, although I well remember hearing a black and white warbler in full song in Port-au-Prince, Haiti, one Christmas Day, and have heard snatches of song on other occasions during this season. By early spring the birds become more restless and then sing rather frequently.

It is sometimes easier to determine the status of a bird on its wintering grounds than in its breeding range. Thus it would appear that Bachman's warbler is even rarer than Kirtland's warbler, and that the Cape May is far more numerous than is generally realized.

At one time wood warblers were considered "our most beautiful, most abundant and least known birds," but the last statement is not true at the present time. All of the species that breed in North America, north of Mexico, have received considerable attention from field ornithologists. Their songs are known and their nests and eggs have been described. The only possible exception is the so-called Sutton's warbler *(Dendroica potomac)* of West Virginia; but in my opinion this bird is merely a hybrid between the yellow-throated and parula warblers. In this case, it would appear likely that a yellow-throated warbler, on finding none of its kind, mated with the parula, West Virginia being outside the normal breeding range of the former species.

It is a pity that many of our ornithologists who have visited tropical America were intent only on obtaining specimens and cared little about the living bird. For this reason not

Eliot Porter

The yellow-breasted chat is the largest and most aberrant member of the family.

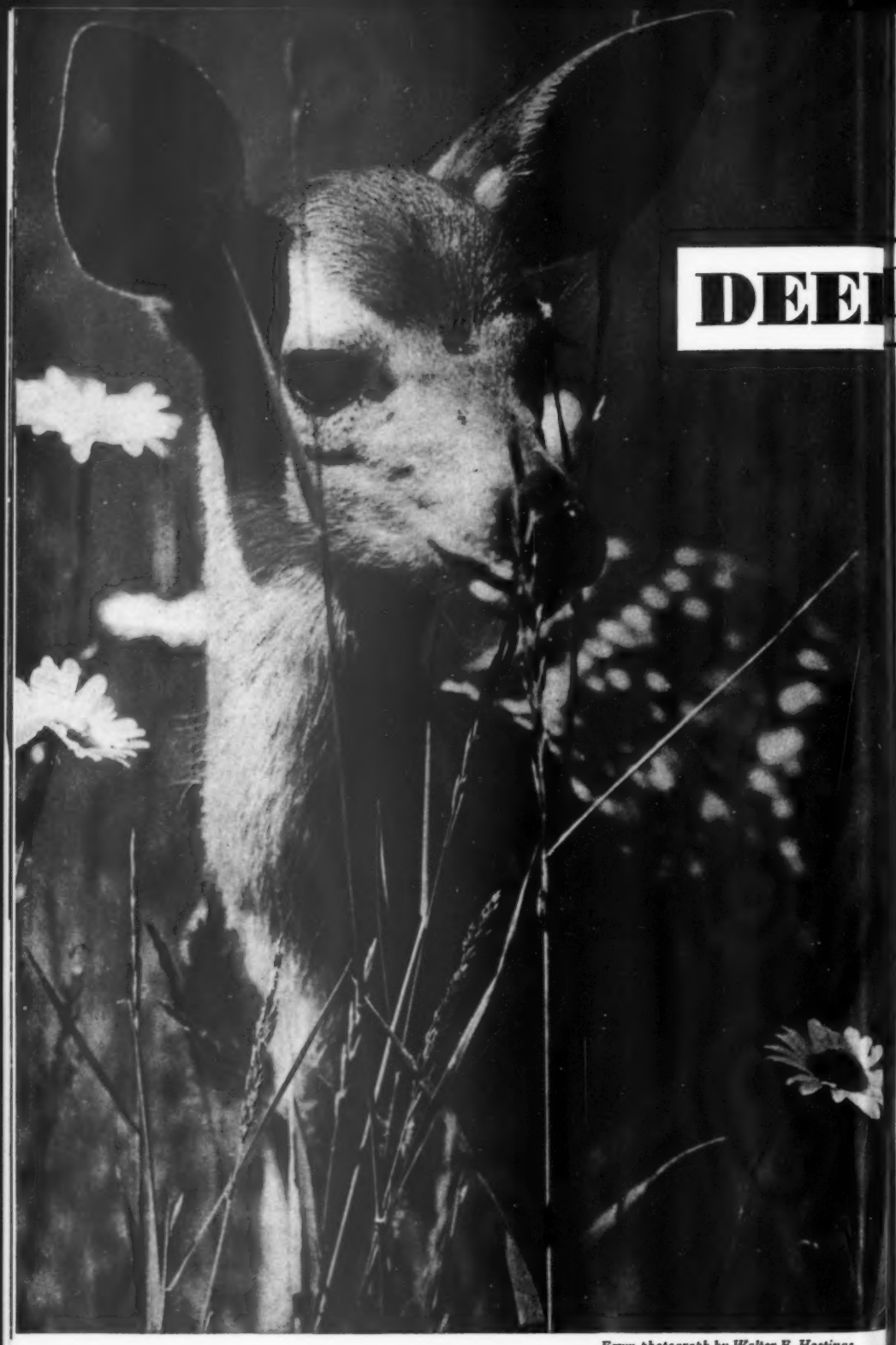
much is known about warblers south of the United States, particularly in Central and South America, other than what can be learned from skins, which information is of value mainly to taxonomists.

The largest and most widespread of the tropical genera of wood warblers is *Basileuterus,* a rather heterogeneous group. In addition there are numerous "species" of yellowthroats *(Geothlypis),* and also the gayly colored *Myiobori* of the Temperate and Subtropical zones, with their Tropical Zone representatives the beautiful red-breasted chats (not to be confused with our yellow-breasted chat, the largest and most aberrant member of the family). None of the above are found high up in trees.

Perhaps the most notable of tropical warblers inhabit Central America. These include the sweet-voiced red warbler or *oreja de plata,* an aboreal species of the pine and spruce forests of the Mexican highlands, and the lovely Irazú warbler, a dweller of the mountain tops of Costa Rica and Chiriquí, and the most southern member of our genus *Vermivora.*

Several North American species breed in Central America and in the West Indies. The bird we know as Sennett's warbler, closely related to the parula, ranges as far south as Argentina. However, the yellow warblers are the most widespread of the family, nesting from northern Canada and Alaska south to northern South America and the Galápagos Islands. The males of some of the southern subspecies have rufous caps while others have the entire head rufous. On the mainland, south of the Mexican plateau, they are confined to the coastal mangrove swamps.

I hope that after the war more of our ornithologists will be induced to go to Latin America in order to study the life-histories of the birds of these tropical countries. The months of May and June would be the most interesting in Central America and the West Indies, since these constitute the breeding season of most of the rarer forms. I have on several occasions visited the Tropics in order to study a single species and have usually had considerable success. Indeed, such a trip cannot end in complete failure, since this region is so rich in bird life that we are bound to make some unexpected discoveries which we shall remember with pleasure for the rest of our days.



DEE

Fawn photograph by Walter E. Hastings

This discussion of the white-tail in the Northeast points up a challenging conservation problem.

E TROUBLE

By Dave Cook

THE white-tailed deer is a hardy and versatile creature, well able to get along in spite of adverse weather, seasonal food shortages and potent enemies. In ancient days the eastern Indians depended heavily upon it for hides and sinews, for antlers, bone and meat—the makings for clothing, tools and dried venison, one of their staple winter foods. But, even in those days, deer were not always and everywhere plentiful. When they were scarce and the supply of dried meat fell short, the hunter tribes starved. So the deer was, to the red man, very important because, in the great forest lying between the sea and the prairies, venison was the chief source of protein food.

The coming of the whites brought great changes. The farmers, always hungry for new lands for fields and pasture, pushed ever westward into the forest, clearing as they went. Always, they were preceded by a skirmish line of traders, trappers, Indian fighters and professional hunters. Under the combined pressure, the wild animals that had formerly abounded there melted away. From most—and the best—of their former haunts, the white-tails were quite thoroughly killed off; considerable numbers remained only in rough and remote places. However, a few did manage to persist in favorable locations scattered throughout their former range, the seed from which was to come a new crop.

About 1900, two trends which had been slowly developing suddenly sprang into prominence. One was the idea of conservation, spark-plugged by Theodore Roosevelt. Public appreciation of and regard for wildlife and other natural resources grew by leaps and bounds. The moose and the elk were gone but the deer might yet be saved. Long closed seasons were imposed, salting and hounding were outlawed, buck laws passed. Pot-hunting was banned, socially as well as legally. The deer started on the long road back.

Along with legal protection came a change in environment. Farm abandonment, which had begun in Civil War times, became widespread. On thousands of hill-top and back-woods homesteads throughout the East the occupants had given up the struggle and gone elsewhere, leaving the land to be repossessed by the forest—and the deer. But the return of the deer was slow, due at least in part to sheer lack of numbers. Then, quite suddenly, deer seemed to be everywhere and much of the old range was definitely though thinly reoccupied. That happened during the '20s and early '30s. Since then, the increase has been unbelievably rapid. It came earliest in Pennsylvania, but big deer herds are now a problem in most of the well-wooded states south and east of the Great Lakes.

I well remember that, in the autumn of 1923, two deer were reported to be in a swamp a few miles south of Ithaca, New York. Search as we might, we never found sign of them. On Connecticut Hill, in this same section, deer were not encountered by the game survey crews until the early '30s. Today, only a decade later, it is not uncommon to see a band of twen-

With its scant winter food supply exhausted, a starving deer wanders weakly through the woods and . . .

. . . finally collapses

. . . lays its head on the snow

W. E. Sanderson

. . . and dies.

ty, or to encounter as many as one hundred in a short drive during the period of late winter concentrations. Except for dates, the story is the same over much of the old range of the white-tail. Within a few miles of many a populous community one comes upon big highway signs reading "CAUTION—DEER CROSSING —4 MILES." Incredible though it may seem, deer are abundant throughout the densely-populated New England and Middle Atlantic states. Truly, the deer have come back.

White-tails have the happy faculty of thriving on many sorts of food. In spring and summer they eat green stuff; in autumn, fruits, acorns, beechnuts and such; in winter, hardwood twigs and the foliage of certain evergreens. Only when their range has been browsed out or when the deer

are immobilized by deep, uncrusted snow, is food a critical problem.

Their chief remaining enemies are armed men and running dogs. Against the latter, when flight does not suffice, the deer is a capable fighter, delivering punishing blows with the front feet. Although they are a nuisance, it is only occasionally that dogs seriously menace the deer. In the absence of the gray wolf, the mountain lion and the wildcat, deer populations can be controlled by only two agencies, the huntsman with his gun—or starvation.

Some biologists have suggested that deer be controlled by re-establishing the gray wolf and the mountain lion, nor is this proposal so fantastic as it may at first seem. These bigger predators hunt for food and not for fun and they are bound by no man-made game laws, restrained by no ideas of chivalry. The old, the weak and the very young are all fair game. They travel the range the year around, in foul weather as in fair. There is a real place for them in wilderness areas difficult for human hunters to reach. However, it is unlikely that the idea will find much favor in the more densely populated parts of our country.

When deprived of their natural controls, deer multiply rapidly and tend to outrun the ability of their range to feed them. Then, the animals begin to consume not only the yearly growth, but also the trees and shrubs that produce that growth. They eat up the capital as well as the interest. Many food plants are killed outright, others severely injured. The deer starvation that follows is as appalling as it is unnecessary, for it represents the end product of human failure to save the deer from themselves. Literally, we have killed them with kindness.

A ruined deer range is a sad sight indeed. All the palatable food plants are eaten back as far as the animals can break the stems; no twig that is within reach remains. The herbs and grasses of the forest floor, and sometimes even the fallen leaves, are utterly consumed. The woods are browsed out as high as the biggest deer can reach by standing up on its hind legs. And then, when all the good food has been consumed, the starving deer begin to fill themselves with unpalatable stuff—material that stays the pangs of hunger but fails to sustain life. In the north, the paunch of many a winter-killed deer is stuffed with the twigs of spruce, which is the poorest kind of deer food.

Once over-browsed, food plants are slow to recover. The carrying capacity of such range has been seriously impaired and even a few remaining deer suffice to keep it so. Unless they extend well beyond reach, shrubs are so weakened that they cannot fruit heavily. Such seedlings as may be able to establish themselves will, in their turn, be eaten off. The best deer foods, being most heavily used, are at a serious competitive disadvantage and the unpalatable plants tend to crowd them out. Ultimately, the land may be occupied by plants on which deer cannot thrive. Such conditions may persist for a long time, until some natural or man-made cataclysm upsets it or until it is modified by the slow processes of plant succession.

Such outbreaks of deer have occurred in many localities, from the cedar swamps of the Lake States to the laurel thickets of Pennsylvania. Nor is it necessary for the deer to clean out the *whole* of their range before getting into trouble. During the flush of the growing season there is always plenty of green stuff, and to spare. When the snowy season comes, especially in the North, deer tend to

The author of this thought-provoking article has not covered several points which we should like to bring up for your consideration:

1. Elimination of bounties on and restoration of bobcats.

2. Hunters do not select the poorest specimens.

3. Live-trapping on enclosures as a means of culling the poorest specimens, with governmental disposal of meat and hides.

bunch up on certain favorable wintering grounds. The destruction of the food supply on these relatively small patches can be as critical as over-browsing the whole range, for a deer cannot live for long with an empty paunch.

Perhaps the speediest cure for an over-browsed range would be to exclude all browsing animals for long enough to permit shrub and tree seedlings to become firmly re-established. Such a drastic "shooting down" of the deer herd would depopulate large areas of summer range, for most of the trouble spots are in winter concentration areas. Undoubtedly it would meet with strong opposition from both sportsmen and naturemen. Yet, so long as a substantial number of deer remain on an over-used range, recovery will be slow and the carrying capacity of the range may never be restored.

Many naturemen are disturbed by the apparent scarcity of buck deer, fearing that the sportsmen have shot too many and that their loss will harm the herd. Sex ratio, which is by definition the ratio between males and females, is often misapplied to deer, where it is popularly considered as the number of those with antlers compared to those without. One breeding buck to two does would surely maintain full productivity in the herd. This might show a proportion of antlered to antlerless deer (bucks to does-and-fawns) of from 1 to 4 up to 1 to 6, depending on the size of the fawn crop. One antlered buck in a band of six deer would, therefore, be quite natural, biologically sound and no cause for alarm.

Deer are prolific creatures. Some recent studies show that, except for the colder, northern parts of the range, at least some female fawns breed when less than a year old, producing a single fawn. Mature does commonly have twins and continue to have fawns as long as they live, which may be ten to fifteen years. Deer are polygamous, so even a considerable reduction of the bucks through hunting need not reduce productivity. Buck laws have been widely enacted and have proven an effective means of building up depleted herds. But they have been unsuccessful in controlling the deer once the herds have been built up. When we consider that deer can double their numbers every year, it is evident why spectacular increases sometimes occur. Because they are so prolific, so long-lived and so proof against all enemies except man, deer herds must be strictly and carefully controlled. Once the herd has completely occupied the range, any increase should be balanced by an equal harvest—and in both sexes.

Many people are horrified by the great slaughter which attends a successful deer season, especially in the more densely populated sections where the deer are still something of a novelty. There is apprehension lest the herd be done irreparable harm. When does are killed, the situation is viewed with even greater alarm, for are we not then destroying the vine as well as the fruit? The truth is that, wherever deer are well established, we are more likely to destroy the herd by *under*-shooting than by oc-

casional *over*-shooting. The latter can be remedied by a few years of increased protection; the former leads to over-browsing, with all its attendant evils. Many see the prize brought home by the successful hunter. Few see the tattered hide and bleaching bones of the deer that died of starvation.

The long-term trend in land use is toward more intensive operations on fewer acres. We have not yet seen the end of farm abandonment, which is one of the prime factors which have brought about improved conditions for forest wildlife. So long as these conditions remain favorable, there can be no real danger of a permanent reduction in the number of deer, unless it be deliberate. Any animal that can consistently double its numbers each year needs control as much as it needs protection.

The present deer situation will require tolerance, understanding and realism on the part of all who are interested in perpetuating the animals, for whatever reasons. Over considerable portion of the range, the deer herds are bigger than the land can permanently support. They are living on the surplus of food plants built up during the decades when the deer were scarce or absent. Only a few years of unrestrained increase will be required to over-browse many critical areas. In the interest of true conservation, and to maintain satisfactory herds indefinitely, we may all have to be satisfied with fewer deer. Either the hunters will keep the animals in check or the deer will destroy the range by over-use and themselves by starvation. Unless we take strong and well-considered measures to keep the deer in balance with their food supply, it may be that, even as our grandfathers told our fathers, we will tell our sons of the great deer herds we *used* to have.

Do we kill them with kindness?

C. L. Broley

A Century of Thoreau

This year marks the centennial anniversary of Thoreau's experiment-in-living at Walden Pond—today the echoes are heard round the world.

By Walter Harding

With decorative wood engravings by Thomas W. Nason from the Heritage Press edition of "Walden." The engraved portrait is from a drawing by Samuel Rowse.

ON A warm spring morning in 1845, just a century ago, young Henry Thoreau of Concord cut down a few trees on the shores of Walden Pond, commencing work on a cabin that became immortal in nature literature. The material cabin long since disappeared but Thoreau's adventures in it have lived on in the pages of the greatest American nature classic, *Walden, or Life in the Woods.*

Thoreau's life at Walden Pond was an idyll. Its quiet simplicity was the fulfillment not only of Thoreau's dream, but also that of each of us who has wanted to get down to the simple essentials and commune with nature—and himself. Yet his was by no means a life of indolence. He worked hard at hoeing his acres of beans, at writing his books and in studying the world about him. But he also took time for those broad margins of leisure in which we grow, as he said, like corn in the night.

Even the birds and animals around him seemed to realize that here was a man who, having abandoned the hurly-burly rush of city men, had determined to live life as intensely as they. They accepted him as one of their own. The rabbits nested beneath his cabin, bumping their foolish heads on the floor as they made their hasty exits. The squirrels explored his furnishings, searching for newer nut supplies. The field mice came to nibble crackers in his fingers. Even the fish in the pond would come close to shore, at the snap of his fingers, to be fed. Birds nested in the trees all around him and he was prouder of a chickadee that once alighted on his shoulder than of any military epaulet.

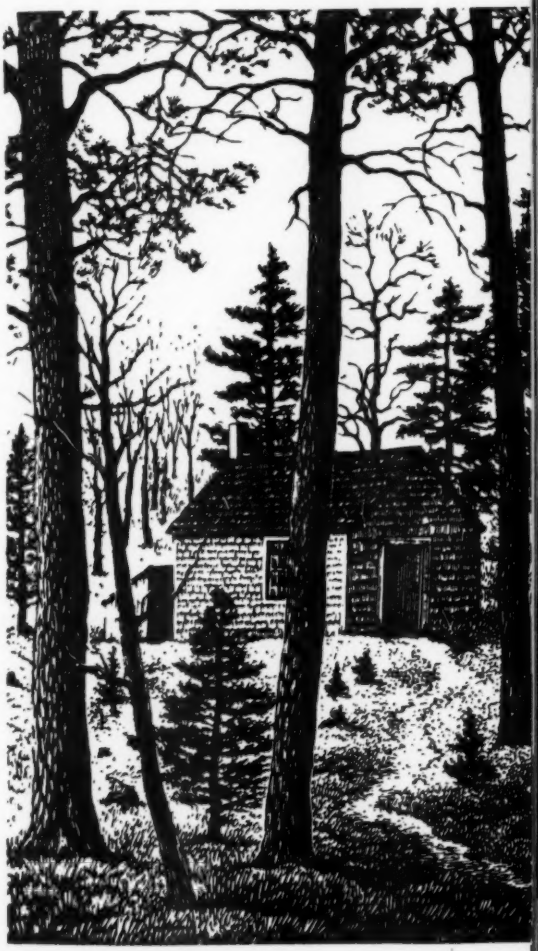
Thoreau has written lovingly about

his adventure in *Walden.* It is one of the greatest classics not only of American but of world literature. Reprinted and translated, it has circled the globe, attracting hundreds of thousands of readers. Nearly a century old, it lives as few modern books live today. Many have been led out into the woods and fields by its organ-toned phrasing of the joys of nature. It is one of those rare books that can be read out-of-doors. It is not too much to say that it has done more to make our people conscious of the world about them than any other work of American literature.

Yet Thoreau cannot fairly be called a "one book author." His collected works fill a score of volumes and each has an attraction all its own. His first book, written incidentally at Walden Pond, is *A Week on the Concord and Merrimack Rivers.* One of the most unique travel books in print, it has set the example for many since. It is as digressive and meandering as the rivers he followed on his journey. "Friendship," one of the several essays imbedded in its text, is a gem. After *Walden,* the last book published in his lifetime, came a series of travel books, *The Maine Woods, Cape Cod* and *A Yankee in Canada,* which reveal Thoreau's dry humor and keen perception at their best.

It was in the early eighteen-eighties that H. G. O. Blake of Worcester, Massachusetts, published the first selections from Thoreau's journals, culling the nature notes from the manuscript volumes and publishing them in four books, one for each season of the year. Blake was one of Thoreau's personal friends and the heir to his manuscript journals. So popular did Blake's editings become that Thoreau's publishers soon brought out the first set of his writings, in eleven volumes, and in 1906 followed it with the twenty-volume edition including a fourteen-volume transcription of his journals.

Students who turned to these volumes for their nature-lore found what they wanted. They found the glories of out-of-doors so beautifully interpreted that a whole school of nature writers sprang up in the wake of Thoreau, the school of Burroughs, Muir and Sharp—a school almost uniquely American. England has its Gilbert White and Izaac Walton,



Thoreau moved into the cabin at Walden Pond on July 4, 1845.

Pine trees and oaks still surround Walden Pond, that gemlike glacial lake southeast of the village of Concord where Thoreau conducted his famous experiment - in - living. Thrushes still sing in its woods, deer once more drink at its shore, and off across the lake the trains still sound their melancholy whistle.

France has its Fabre, but only this country has its whole group of writers who interpret the woods, the ponds and the fields for the masses. Thoreau, quite unconsciously, was the founder and he set a standard which none of his followers has equalled or surpassed.

In recent years, it has become somewhat the fashion to decry Thoreau's skill as an observer of nature. Even Burroughs, far more indebted to Thoreau than he realized, laughed at Thoreau's unscientific approach to nature. True enough, he made errors in his bird studies. He once described a glow-worm as having wings. He fell in completely with the then popular, but now thoroughly discredited, adaptationist theory of protective coloration for wild life. But those who belittle him forget that Thoreau was a pioneer in an unexplored field; that he made the errors of the beginner. They also forget that on the positive side he aided Agassiz and Thaddeus Harris in the identification of several new species of fish, insects and reptiles; that quite independently he discovered and published the theory of the succession of forest trees; that he worked out one of the first calendars of the flora and fauna of an American locality; that he discovered and published some of the most important principles of limnology years before limnology became an established science; and that most important of all he recorded his discoveries and his experiences in some of the most beautiful prose in the English language.

There is no question about it, Thoreau was one of the greatest American masters of the art of prose. He turned out sentences as carefully and precisely as a master craftsman turns out woodcarvings. He had a command of the English language that has been the joy of learned philologists and humble readers the world over. He created a prose style that is as unique as his fingerprint, a style that can be recognized easily by anyone who has read his works. Natural and unstilted, it was the closest thing to poetic prose created in his century.

Thoreau's influence on literature has been amazingly widespread. Stevenson's epithet-hurling at Thoreau, terming him a skulker, is well-known. Unfortunately, it is not so well-known that later he recanted and said that he had probably never written a sentence that did not show the influence

of Thoreau's style. H. M. Tomlinson, whom Somerset Maugham terms the greatest English prose-writer of our day has acknowledged frequently his debt to the Concordian and says his delightful tale of his voyage to South America, *The Sea and the Jungle,* was inspired by "that best of travel books," Thoreau's *A Week on the Concord and Merrimack Rivers.*

Andre Gide, in an interview last year, acknowledged the influence of Thoreau and said he carried *Walden* in his pocket when it was virtually unknown in his native France. Sinclair Lewis published an article on Thoreau's importance today and only recently told newspaper reporters he was returning to his Minnesota farm to read the complete works of Thoreau.

Nor has his influence been confined to the literary world. Around the turn of the century a small group of English liberals formed the British Labor Party. Thoreau strongly influenced their philosophy and they early adopted *Walden* as their bible. Cheap paper-bound editions were issued and carried around by their members. Walden Clubs were formed across the country. One of their more capable writers, Robert Blatchford, wrote a book called *Merrie England* which swept into the ranks of the best-sellers and is credited with finally putting the Labor Party into power. *Merrie England* was almost wholly inspired by Thoreau's *Walden.*

About the turn of the century, a young Indian who had studied law in England and later settled down for a career at the bar in South Africa ran across a copy of the essay "On the Duty of Civil Disobedience." Written after Thoreau's one-night imprisonment for non-payment of taxes, it is a protest against our Mexican War. It was from this little known essay that the young Indian, later known the world over as Mohandas Gandhi, derived the idea of his non-violent resistance campaign that shook the British Empire to its very foundations.

Gandhi was so aroused by the essay that he had it reprinted and distributed it among his friends, always carrying a copy with him even to prison. Years later when Webb Miller, the late United Press correspondent, interviewed him in India, Gandhi spent most of his time asking about the Concordian. He chose the right man to question for Miller later confessed in his autobiography that he always kept a copy of *Walden* close at hand and wore out six copies in his lifetime.

Meanwhile the idea of civil disobedience has continued to spread. The underground movement in oc-

cupied Europe has found it one of the most effective weapons against the Nazis. And in Central America last year, several dictators toppled from their thrones when the masses turned to civil disobedience after military coups had failed. As students of literature agree, Thoreau did not originate the idea of passive resistance. It can be traced back as far as Mencius, the Chinese philosopher of 300 B.C. But Thoreau it was who brought it to the attention of modern man as an effective weapon against the entrenched evils of government.

Some there are who have thought Thoreau's influence was strictly limited, that he was not an author for the masses. But while it is true that there are many who cannot seem to appreciate and enjoy his writings (nearly a volume could be filled with published diatribes against Thoreau), he has become amazingly popular in recent years. Booksellers acknowledge his works to be best-sellers among the classics. Concordians report an ever larger number of tourists each year to pay homage at his grave and to place a stone on the Walden cairn.

The great depression of the past decade served to turn even more toward the advocate of the simple life. As a young college student put it, "Thoreau is one of the few great writers who doesn't insult a poor man." Yet in these present boom-time days, the interest in Thoreau continues to increase. Perhaps his arch-individualness is a welcome release from the inevitable restrictions of a wartime economy. At any rate, his influence has continued to grow like the proverbial snowball rolling downhill.

A hundred years ago the townspeople of Concord watched Henry Thoreau and wondered. His family had slaved to help put him through college and yet to what avail? He gave up a position as a school teacher after only a few days rather than discipline his pupils with a whip. He perfected the finest pencil this side of the Atlantic and then refused to gather in profit on it, saying that what he had done once he had done finally. He refused to pay his poll tax because he agreed with the "fool" Abolitionists and was put in jail until his aunt paid his way out.

For two years he lived in a little hut in the woods and existed on beans. The rest of his life he devoted to wandering in the woods and giving queer lectures that few could understand or wanted to. The one thing he was successful at was surveying. Everyone had to admit he was the best surveyor in the county—but then he would survey only when he was in the mood, which wasn't often enough. No, to the townspeople of his day, Henry Thoreau was a complete failure and they pitied his family for having wasted a precious college education on him.

But his family never lost faith. They were a little hurt when he insisted on leaving them and going out to live alone at Walden Pond. Some of them were disappointed when he shocked the town with his jail escapade. Neighbor Emerson said something about hitching one's wagon to a star and Henry himself said something about following one's dreams until they come true, about building foundations under one's castles in the air. His family had faith in his castles, his dreams, his star. Although the neighbors laughed or chided, they continued to believe in Henry.

If Thoreau made a failure of his life, it was one of the most successful failures we have ever seen. The prophet who was not honored in his own town now receives the homage of the world. The Concord failure has become a man of the world.

The COURTSHIP of the SAGE GROUSE

Written by a man who has made extensive observations of the social behavior of this vanishing North American bird, this account gives you a grandstand seat at one of the most fantastic shows in the bird world.

By John W. Scott

With photographs by the author

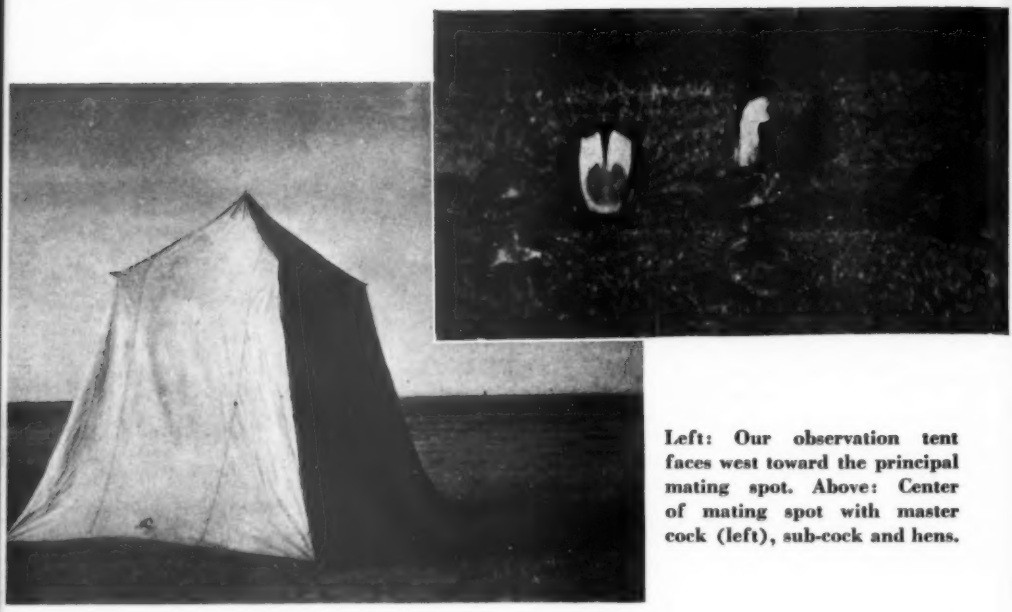
LET'S take our camping equipment and drive to the sagebrush plains of central Wyoming down along Muddy Creek to watch one of the most fascinating shows in the bird world.

For more than forty years this site has been used as a spring rendezvous for sage grouse. We pitch our tent on a spot known to favor close-up observation of the morning performance. Now, at 5 p.m. not a bird is in sight. Looking eastward toward Laramie Mountains there are a few scattered clumps of sage brush, heavy sage brush farther away. Similar conditions prevail down the creek northwestward, back of the photographer. The day has been windy, but now not a breeze is stirring.

Early in April at an elevation of 7000 feet, the weather is cool and it is warmer inside our tent. Suddenly we hear the faint *PLOP* of a sage cock. Peering from the tent we see two cocks coming out of the sage brush 300 yards away. It is now almost sunset, and some other cocks come walking or flying in from a distance. Singly, or in pairs the cocks take locations which they have won the right to occupy by previous encounters. Occasionally there is a fight as a belligerent cock strives to get a more favored location. Forty or fifty minutes after the first cock appears, a few hens come into the area. The approach of the hens is a signal for strutting amongst the cocks. However, this evening concourse is merely a sort of dress rehearsal for the principal characters which will play a leading part in the main performance on tomorrow morning. There are seldom more than 50 per cent as many cocks and 10 per cent as many hens as will take part in the main event.

Night is falling rapidly, and the hens depart before the last cock flies away, leaving peace on the open plains in an all pervading stillness. The stars gleam in a clear sky, we gratefully crawl into warm eiderdown sleeping bags, and fall into a deep dreamless sleep, unbroken except for the roar of the transcontinental, midnight train as it crosses the valley several miles below. Peace and tranquility reign.

We awake with a start! Something



Left: Our observation tent faces west toward the principal mating spot. Above: Center of mating spot with master cock (left), sub-cock and hens.

has happened near at hand! It is still quite dark, with only a faint streak of light along the eastern horizon. We listen a moment for the sound, and then it comes again, the *purp-PLOP* of a sage cock close to our tent. There, less than twenty feet away, his white planoply faintly outlined, is a sage cock in all the glory of the nuptial strut. And now we make out several other cocks farther away wheeling and turning to make the strut. The *plop* does not seem to be very loud, but on a still morning the resonant sound may be heard for nearly a mile. So rapidly do the cocks assemble that within 20 or 30 minutes practically the entire assemblage is present.

This strutting ground, as we could see last evening, is a grass-covered plain along the creek about one-half mile in length with an average width of less than 300 yards. From this tent I have made actual counts of the more than 350 cocks. Since not all cocks can be seen from one spot, we estimate that approximately 400 cocks use this strutting ground. The cocks are widely scattered on the entire area, singly or in pairs, some distance apart, except at a few places where they are more concentrated around mating spots.

Such distribution is not an accident. Each slight knoll or prominent location is occupied and has been acquired by aggressive competition. This aggressive behavior has developed through unknown ages, but you can follow its operation by observing behavior of the cocks through an entire mating cycle. A few cocks begin to assemble here daily, early in March, two weeks or more before any hens appear. The number increases rapidly. For example, on a cold morning on March 20, after one-half inch of ice had formed, 175 cocks gathered on the strutting ground; one hen wandered into the area, but stayed only a few minutes.

More and more cocks and hens come to the strutting ground until the maximum is found during the height of the breeding season which usually occurs between the tenth and fifteenth of April, unless delayed by severe and inclement weather. During

this period there is vigorous competition, intensified when the hens arrive. At these early assemblies there is the usual strutting, and challenging and bluffing and fighting by which territorial locations are established and dominance determined.

Now notice, as the cocks come in, that each one flies or marches to a particular spot which he occupies with an air of possession. Our tent has usurped the location of this cock strutting three feet away. Activity of a cock is confined to a radius of a few feet unless engaged in one of the following tasks. A cock quickly accepts a challenge and usually drives back an intruder, struts at his best in a wider circle on the approach of a hen, and his advance toward a cock in a more favored location is usually repelled. However, by persistence the contest may be a draw, and the cock allowed to remain near at hand in the more favored position, where he becomes the chief rival of the first possessor, in contests frequently renewed when nothing else occupies their attention.

It is lighter now and we can see, at some distance, four or five groups of cocks, each consisting of three or four to seven or eight birds. There is no more commotion here than elsewhere, and such groups mark the center of later mating activity. Judged by the number of cocks present, the volume of sound produced, and the continuous activities of strutting, challenging and fighting, the maximum activity is not long after daylight.

Some 15 or 20 minutes after the first cocks appear we can make out the shadowy outlines of a few hens, apparently wandering about aimlessly, stopping occasionally to look around. Now it is light enough to distinguish between a hen and a cock at a distance of 100 feet and we see that a few of the hens have discovered the groups of cocks and are beginning to congregate on the mating spots. It is getting lighter now. The number of hens on the mating spots is increasing rapidly. Some hens are wandering about, looking over the situation, and leaving without joining the groups on the mating spots. Other hens, after tarrying on the mating spots for some time, leave without mating.

At each of the mating spots we find the following organization: (a) A compact group of hens occupying a space, usually not much larger than an ordinary room. (b) A master cock parading back and forth, strutting near or among the hens, and which, early in the season, undertakes to do all matings for the group. (c) The

Left:
Cocks scolding in fighting pose.

Right:
Fighting cocks exchange wing blows.

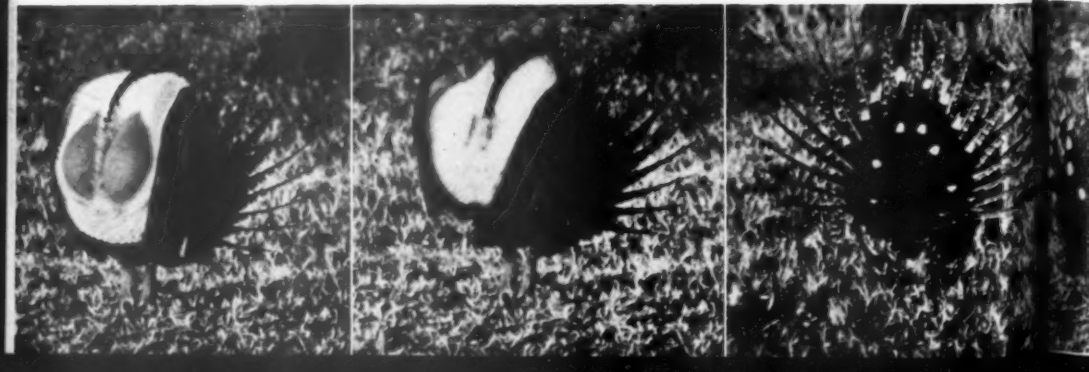
chief rival of the master cock, which we may call the sub-cock, strutting or standing near at hand. Later in the season the sub-cock may take over a limited number of matings without interference, at the tolerance of the master cock. (d) A fringe of guard cocks, usually three to six in number serve to keep away intruding cocks that are not infrequently attempting to join the group of hens.

Occasionally by prolonged persistence a cock may be allowed to join the guard cocks. The master cock and sub-cock tolerate the guard cocks, provide the latter do not come too near or mingle with the hens. The guard cocks are doing a great deal of strutting. Occasionally, late in the season, a guard cock has an opportunity to mate when there are more hens than can be accommodated by the master cock, or when the attention of the latter is distracted elsewhere.

Strutting is performed primarily to express sexual urge and attract attention of hens. It may continue vicariously in the presence of hens waiting to be mated. Secondarily, strutting frequently represents a challenge to a cock in neighboring territory, and after a contest, the parade of the victor. The vigorous, aggressive master cock on a mating spot is almost continuously strutting except when mating or repelling the advances of other cocks. The air sacs which are prominent in strutting are lateral enlargements of the oesophagus. Before starting a strut a cock swallows air thus partly filling the air sacs. Now watch this cock just outside our tent. He spreads his tail, throws his head back, and then with wings partly extended and tense, he advances three or four steps making a one-quarter or one-third turn, and—watch this—he further inflates the air sacs with two or three forced respirations in quick, rhythmic succession, aided by up and down pumping action of the wings. The maximum inflation is followed immediately by an audible forced expulsion of air, a low whistle-like *purp* succeeded at once by the rapid collapse of the air sacs which gives the louder, resonant *PLOP*.

The time now is 50 minutes before sunrise. Mating is in progress. A hen with wings spread squats so low on the ground that her form can scarcely be seen. The master cock starts forward as if he were going to strut, but instead steps up on the back of the hen, and the mating act is over within a few seconds. The cock does not pursue the female, and mating is never attempted unless an invitation is extended by the hen. The invitation consists of a low whistled mating call *puer, puer,* a fluttering of the wings and the submissive position.

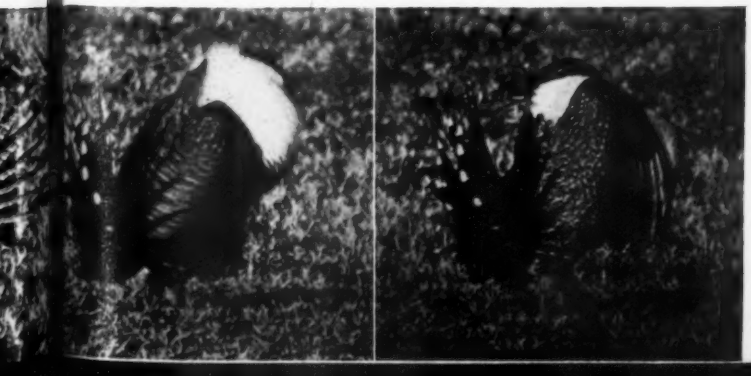
Once started, mating proceeds rapidly, and if the birds are not disturbed, more than fifty per cent of all matings occur before sunrise. I remember seeing a master cock make 21, and another 22 matings in one morning. Matings have been observed as early as April 7, and as late as May 26. How many matings the master cock is capable of making during one



season is not known. Soon after the peak of the mating season, the master cock shows evidence of sexual satiety or temporary incapacity, when he may let the sub-cock make a number of matings, or he may ignore invitations to mate and fight to keep other cocks away from the hens. Only the most aggressive, the most vigorous and usually the largest cocks attain the rank of master cock. This statement holds true of all the cocks on or near a mating spot.

The dramatic character of the annual gathering during the mating cycle is indicated by the fact that three per cent of the cocks in a social organization embracing approximately 800 birds, performed 87 per cent of the matings. It is estimated that all matings each year are made by less than 10 per cent of the cocks. Many cocks undoubtedly never have a chance to mate during their entire lifetime. Yet such is the rigidity of this polygynous system, and the adherence of the hens to the code of behavior required, circumstantial evidence indicates that some hens leave the mating grounds each season unmated. The cocks are about twice the size (weight), and in their fantastic, nuptial strut appear three to four times the size of the less conspicuously colored hens.

An extraordinary system of polygyny prevails in a species in which dominance among the males is based on fighting, bluffing and strutting display. At the same time, at the height of the season, there is mild competition among females for the attention of the master cook. The millions of these birds once found on the western plains bear witness to the efficiency of this system in past ages. The diminishing numbers, and disappearance in some places, is due not to lack of virility, but to lack of management and harmful destruction of its habitat. Truly, we have seen a marvelous, bizarre and fantastic system of courtship behavior.



This strip of pictures shows phases of the dance or strut. From left to right we see (1) a cock with the two air sacs at maximum inflation, (2) deflation 3/16 of a second later, (3) rear view of a displaying cock, (4) strutting with wings in "down" position, and (5) strutting with wings in "up" position ½ second after "down" position. The photograph above shows a cock sleeping after the hens have gone.

Readers who would like to know more about the mating behavior are referred to author Scott's thoroughgoing study in *The Auk* for October 1942.

IN *Praise* OF INSECTS . . .

A protest against their indiscriminate destruction

SINCE the discovery of its uses as an insecticide only a few years ago, DDT (dichloro-diphenyl-trichloroethane) has become an instrument of transcendent importance in medical entomology. It has solved the louse problem and hence has removed fear of typhus. It has been claimed that it is the most effective weapon against malaria due to its destruction of mosquitoes. It has been applied with good results to other vectors of disease in the insect world. Because of these triumphs, a wider sphere of usefulness is now envisioned for it. Forest and field are to be purged of the pests that infest them, and everything is to be well thereafter.

It is at this point that serious doubts begin to assail one. The very potency of this destructive agent should make for caution in applying it on a broad scale. The insect world is a very ancient one and a highly complex one. As yet we know all too little of the hundreds of thousands of species that are spread over the globe and of their interrelations and interdependencies. But we do know that the insects are our allies though sometimes a nuisance and capable of creating economic losses; we are apt to take for granted the helpful activities of our insect friends at the same time that we denounce those which in the course of their activities affect our lives adversely in this way or that.

It seems appropriate, therefore, to make an appraisal of the insects and to emphasize some of the ways in

Promethea moth, one of our many exquisite night-fliers.

Monarch butterfly, cherished beauty of our countryside.

By Herbert F. Schwarz

Photographs by Edwin Way Teale

which they are essential to our well-being and to the ordered harmony of life. There was a time when the value of a bird was measured almost solely by its stomach contents: how many flies had it caught, how many caterpillars had it swallowed. Today we may still pay tribute to the bird for its part in maintaining the balance of nature through its food habits, but surely we no longer limit its value to the purely economic aspects of its activities. Instead we render homage to it as one of the most inspiring things of creation, something that by its flight, song and feathered beauty answers an inner craving of our nature. But in proportion as we value birds for their inspirational qualities we must develop a greater feeling of tolerance toward the insects—even those that may annoy us—on which birds are dependent. For what is to become of that large division of the birds that requires insect food if insect extermination is ever undertaken on a ruthless scale? Even the insects that the average man looks upon as nuisances because they chew up his shade trees and skeletonize its foliage may be valued by some bird as an essential meal. Forests, it would seem, are to be favorite experiment grounds for DDT. A general destruction of silvan insect life might well result in songless and inanimate woodlands.

Although insects are essential to bird life as we know it, they play a

Dragonfly

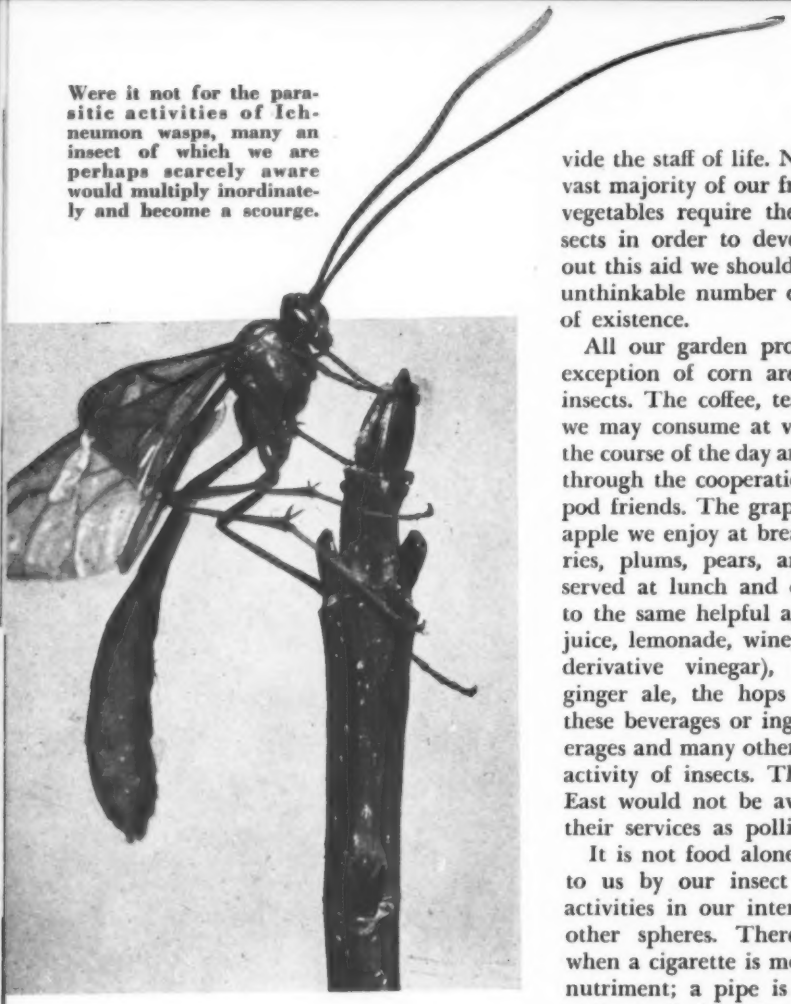
Praying mantis

role no less vital in the life of many of the flowering plants. It is upon the bees and to a lesser extent upon the flies—especially the Syrphidae—and the butterflies and moths that these plants are largely dependent for their perpetuation. It has been estimated that there are possibly 20,000 different species of bees. All of these, true to bee development, go through a larval stage, and all bee larvae are reared on nectar (or honey) and pollen, which is the male germ cell of plants. The adult female bee flies from flower to flower gathering these essentials of life for the coming generation but not all of the pollen grains remain attached to the forager. Some are accidentally shed or rubbed off as the bee explores the recesses of the

Robber fly

Lacewing fly

- **The praying mantis in characteristic attitude, with its front legs, bristling with spines, held ready to seize some unwary insect that comes near. It helps maintain nature's balance.**
- **Slanderous names like "Devil's Darning-needles" and "Horse-stingers" have been given the insect-hawking dragon flies by those who have never taken the trouble to find out that these insects lack a sting.**
- **The lacewing or "golden-eyes" is so delicately beautiful that we are apt to forget it is one of the chief foes of plant lice and as such is known as the aphis-lion.**
- **Robber-flies make it their mission in life to seize and devour other insects, thus safeguarding the equilibrium of nature. Some of these flies resemble bees, and some even victimize bees.**



Were it not for the parasitic activities of Ichneumon wasps, many an insect of which we are perhaps scarcely aware would multiply inordinately and become a scourge.

flower. If they drop opportunely on a female flower of the same species from which the pollen grains were gathered, fertilization is assured and the possibility of reproducing itself is offered to the plant.

One cannot overestimate the tremendous importance of this service performed by the bees, not only as it affects the plant but more importantly as it bears indirectly on man and his very existence. True, certain plants are wind-pollinated, including some of those, like wheat, that provide the staff of life. Nevertheless, the vast majority of our fruits and of our vegetables require the agency of insects in order to develop, and without this aid we should lack an almost unthinkable number of the essentials of existence.

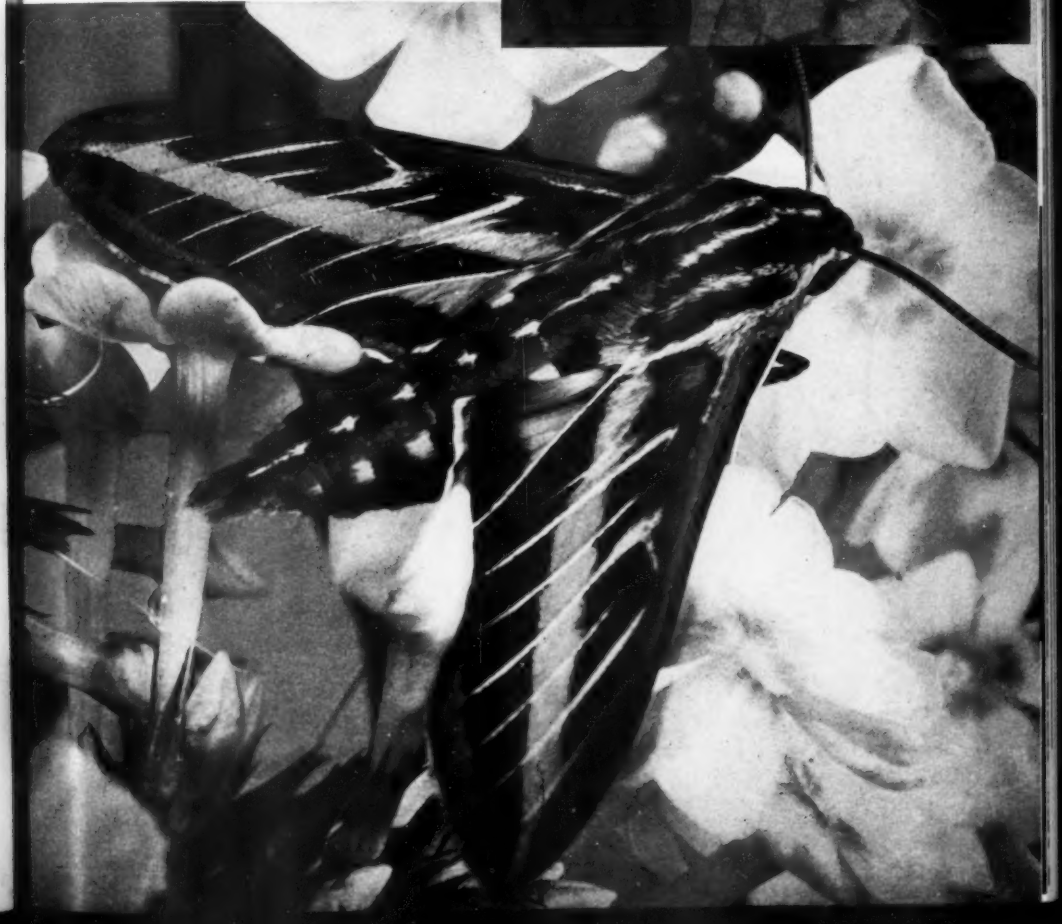
All our garden products with the exception of corn are pollinated by insects. The coffee, tea or cocoa that we may consume at various meals in the course of the day are made possible through the cooperation of our hexapod friends. The grapefruit or baked apple we enjoy at breakfast, the cherries, plums, pears, and other fruits served at lunch and dinner, we owe to the same helpful agencies. Orange juice, lemonade, wine, cider (and its derivative vinegar), the ginger of ginger ale, the hops of beer—all of these beverages or ingredients of beverages and many others we owe to the activity of insects. The spices of the East would not be available without their services as pollinators.

It is not food alone that is assured to us by our insect helpers. Their activities in our interest extend into other spheres. There are moments when a cigarette is more desired than nutriment; a pipe is the companion and consolation of many a perennial puffer; and a good cigar often is the last enjoyment of the day. For all of these pleasant indulgences we are indebted to the pollen-carrying insects, which visit the tobacco flowers, cause the plant to set seed and thus assure next year's plants with their fresh crop of leaves.

Although we might conceivably get on without tobacco—at one time the Old World, at least, actually did—it is almost unthinkable that we could find adequate substitutes for cotton and wool. Yet the cotton plant is

Even the inexhaustible appetite of nestling birds could not keep down the caterpillar population adequately unless insects aided. A Braconid wasp lays its eggs in the "Tomato Worm." The wasp larvae emerge, feed on the caterpillar internally and finally pupate on its outer surface.

The infested caterpillar shown here will never reach the adult stage but a member of the same family, the hawk-moths, is pictured below in all its grown-up splendor. Its name, striped sphinx, is appropriately chosen. It is a day-flier as well as a night-flier.



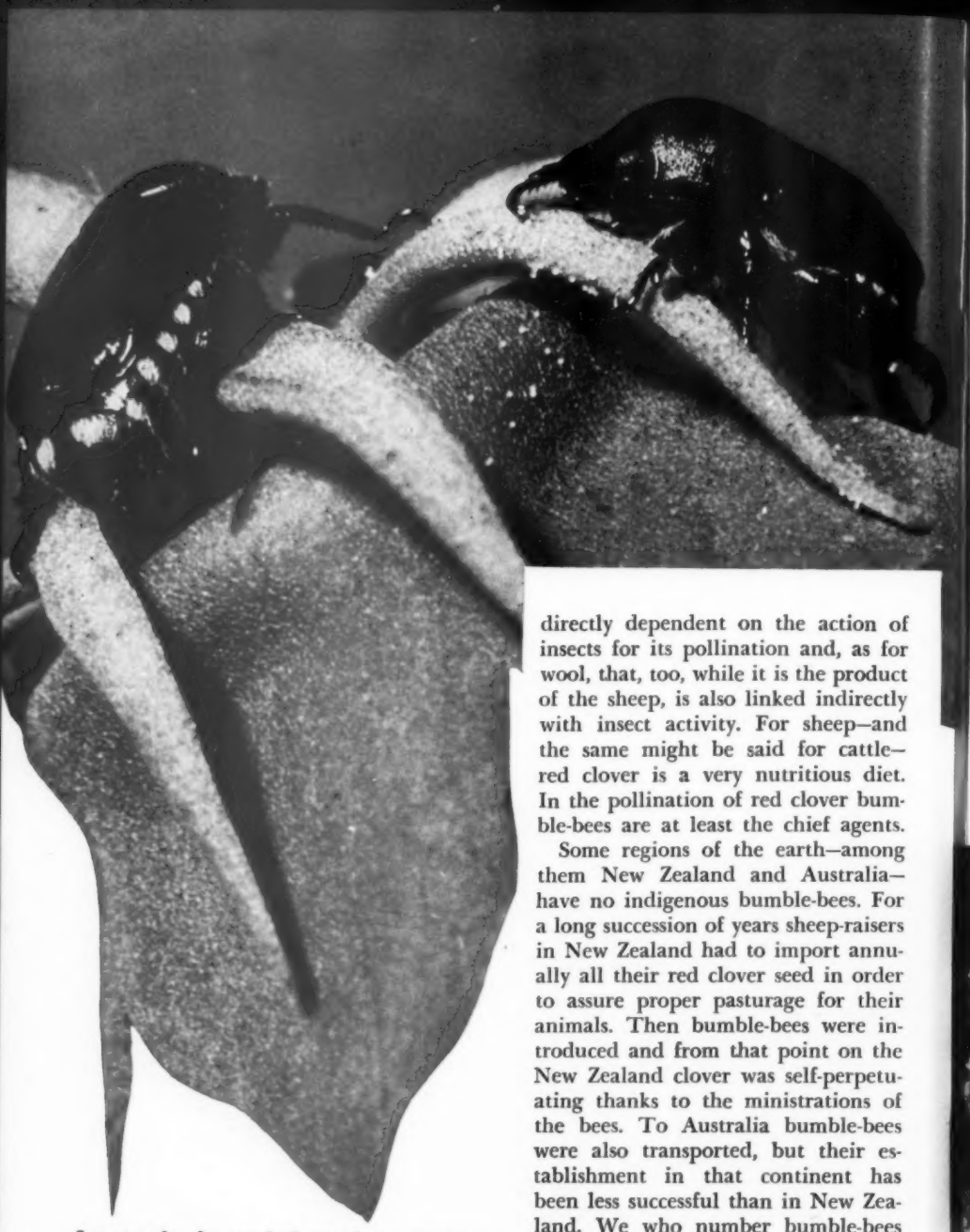
Honeybees on apple blossoms and below, closeup of honeybee's face.

The longer to
bee helps
wool

Closeup of the honeybee, valuable pollinator of our fruit orchards.

Bees play a vital role in the lives of many flowers and food-producing plants

The bumblebee (left) is the chief pollinator of red clover, staff of life for the wool-producing sheep. Carpenter bee (right) is another of hundreds of wild bees essential to the plant world.



Japanese beetles reached our shores unaccompanied by insects that prey on them. Although the ultimate check to their abundance is more likely to come from insects and other invertebrates, the starling and English sparrow have risen in public estimation due to the fact that they consume large numbers of these beetles.

directly dependent on the action of insects for its pollination and, as for wool, that, too, while it is the product of the sheep, is also linked indirectly with insect activity. For sheep—and the same might be said for cattle—red clover is a very nutritious diet. In the pollination of red clover bumble-bees are at least the chief agents.

Some regions of the earth—among them New Zealand and Australia—have no indigenous bumble-bees. For a long succession of years sheep-raisers in New Zealand had to import annually all their red clover seed in order to assure proper pasturage for their animals. Then bumble-bees were introduced and from that point on the New Zealand clover was self-perpetuating thanks to the ministrations of the bees. To Australia bumble-bees were also transported, but their establishment in that continent has been less successful than in New Zealand. We who number bumble-bees among our native apifauna should safeguard these valuable allies, to which we are indirectly indebted not only for wool but also for mutton.

Purple vetch is another flower that is visited almost exclusively by bumble-bees. Such partnerships between a given insect and a particular flower or between a given group of insects and a genus of plants occur elsewhere in nature. Sometimes the degree of specialization that each of the partners has attained in the interests of the partnership is such that the destruction of one partner involves the doom of the other. In view of these interrelations, an undiscriminating attack on the insect world would have profound repercussions upon the world of plants.

One might write at length with zest and enthusiasm regarding the products that we owe to insects. For centuries silk, the output of the silk worm, was the world's choicest raiment, and, notwithstanding the fact that nylon and rayon are disputing its preeminence, silk culture is spreading. Several of our Latin American neighbors are engaged in sericulture and in the Belgian Congo, too, this activity has taken root. More astonishing still, a beginning has been made of silk-raising in the environment of New York.

The value of honey is universally recognized. It was relished by the cave men of Europe. It was sold in the markets of Egypt. Apiculture has today spread over much of the earth. Beeswax has been an invaluable product, too, and over the centuries has found innumerable uses.

Before the discovery of aniline dyes, cochineal, obtained from a Mexican insect, was a favorite coloring agent. The cochineal insect, like the more valuable Indian insect that produces shellac, belongs to the order Coccoidea that includes many insects the beneficial uses of which we may not yet have discovered. This should be remembered by way of offset when we denounce such Coccoidea as the pernicious San José and oyster scales.

Many other products should find

This leaf-chewing native American—the angular-winged katydid—rarely causes trouble, being in perfect balance with its environment.

mention in a panegyric of the insects but consideration of space limits me to the few examples cited, for it is high time that praise be bestowed on those insects to which we are indebted for keeping within proper bounds other insects that might otherwise become excessively destructive. The majority of the insects that make a nuisance of themselves are exotics that have reached our shores unaccompanied by the insects that prey upon them or that parasitize them in their country of origin. Hence they run rampant to the destruction of our crops and our foliage. The only reason that the same thing does not occur in the case of our native insect fauna is that that fauna is kept in check by other native insects that feed on them.

The insects that as predators or as parasites attack other insects are often highly selective of their prey, confining themselves to certain species or groups of species. Hence the serious reduction in the numbers of a given insect that exercises a control over the population of its prey may result in the inordinate abundance of the prey, which thereby has been liberated from the persecution to which it is normally subjected.

Due to the potency of DDT and its abiding toxic quality it is bound to deal destruction to those insects on which man is today dependent for his well-being as well as to those that affect him adversely. As yet it would seem that most of the experiments testing the destructiveness of DDT have been confined to the so-called harmful insects. Yet even among these the results have not been uniform, some species within a single family showing more resistance to the toxic qualities than others. It is fair to assume that many disparities of this kind would reveal themselves if the experiments were applied more widely, and that instances would come to hand where the insects we seek to control are more resistant to the poison than the insects that prey upon them.

The difference in susceptibility to the poison on the part of different organisms is, however, only one element of concern. It must be remembered that, while many insects lead an exposed existence, others spend at least their larval life secreted in the earth or in the trunks and branches of trees. Thus inequalities are likely to assert themselves in the mortality of this species or that due to the different degrees of security enjoyed.

What about the aquatic insects? It is claimed that one pound of DDT in a 5% solution of Diesel or fuel oil is sufficient for the destruction of the larval stages of mosquitoes present in a stretch of 5 acres of water. That is a measure of the tremendous potency of this insecticide. But what about the insect larvae other than those of mosquitoes that share this watery habitat? What about the May flies, for instance, and the dragonflies that are both important in man's economy? What about the fish that feed on aquatic insects and what about the fisherman whose avocation depends upon the presence and well-being of those fish?

The account here given is not intended as a challenge to the legitimate uses of DDT but is an expression of hope that DDT may be applied with the discreet caution that should attend the employment of anything so devastatingly effective as this chemical is claimed to be. The power of life and death over a fauna as inclusive and significant as that represented by the insects calls for restraint lest that which from time immemorial has established its place in the scheme of things be put in jeopardy or be injured beyond redress.

Aerobatics

Hummingbird in battle with bumblebee by Frank Pagan.

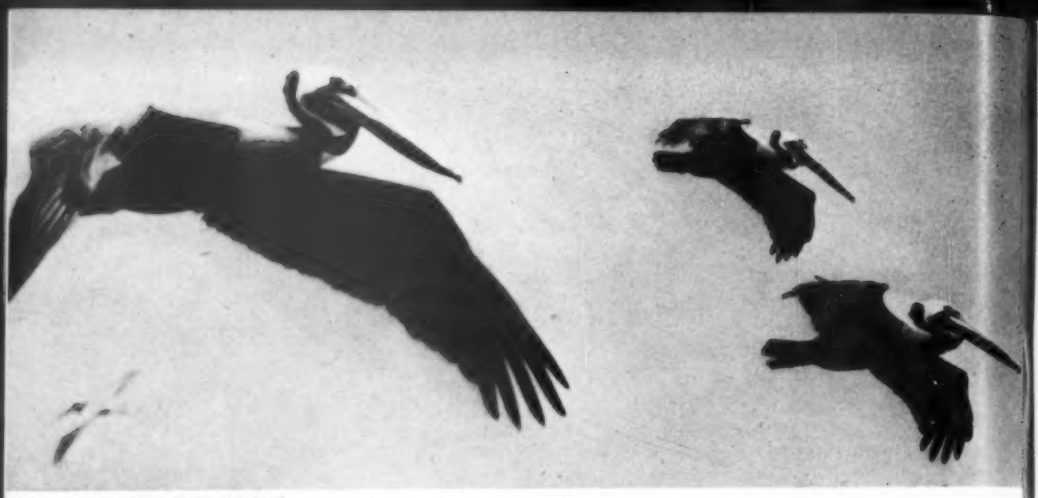
By John H. Storer

THE ability of birds to maneuver, to perform actions outside the ordinary routine of flying, is one of the most interesting subjects in a study of flight, and yet one of the most difficult for photography or accurate description. The actions are apt to take place in a matter of split seconds, and the photographer who can catch and focus on the action within the range of his camera may count himself fortunate.

Among the various types of maneuver some are merely playful, evidently just done for the fun of it. Others are skillful and thrilling short cuts like the dive of a soaring wood ibis, or the meeting of a sudden emergency, an "air pocket" or a collision with another bird and, most exciting of all, the deadly serious business of attack and escape.

Many bird lovers have thrilled at the sight of an osprey doing loops or backward somersaults in the air. On a bright afternoon, perhaps after a good catch has met the family's requirements for the day, one may sometimes hear the osprey's shrill call overhead. The bird seems to be hovering, but looking upward, not down toward the water as it would when hunting. It flies forward with rather labored flight, evidently trying to gain altitude as well as momentum. Then, with a sudden burst of speed it zooms upwards with wings still flapping, until it is headed vertically upward, and starts to fall over backward. It evidently does not enjoy testing its strength too far. I have never seen it actually go over onto its back. The embryo loop will turn into a sideslip which will level off into straight flight again.

The bald eagle may carry this loop a little farther. Mr. S. A. Grimes showed me a nest near Jacksonville, Florida, where the old birds seemed eager to impress all intruders with



Allan D. Cruickshank

Brown pelicans are rather bulky birds. Their 25 pounds is mostly meat, for the skeleton is so light it weighs only a pound and a half.

their prowess. When we approached the nest the old birds flew up, not very far, and started doing somersaults in the air. These birds would actually turn over on their backs and make a couple of wing beats in that position. The motion pictures, too small to show much detail, give the impression that the birds lost little altitude in the process, and made little forward headway. The propellers seemed to be held nearly horizontal on the back stroke, which in this case would be the downward stroke, as though the lift were being gained from a downward push.

One of the most beautiful bird exhibits in Florida is a flock of several hundred white ibises stretched out in a long undulating line against a vivid blue sky. Sometimes one, or two or three birds together, may drop from this line and fall head over heels, giving the impression of falling leaves as they whirl over and over, only to regain their balance after a considerable fall and fly back into line. This seems to be nothing but play, although they look completely out of control as they fall.

At other times these ibises may be returning to their rookery very high overhead. Perhaps to make use of some favoring air current, they will maintain their altitude until directly over the rookery. Then they dive downward and, at the right time, will check their speed with roaring wings, still falling, but with wings outstretched, horizontal, in a ninety degree stall with feathers ruffling all along the back; head and legs dropped straight downward as though to help keep balance. A little above the tree tops the wings rotate to an angle to give forward motion and lift and the birds sail in, making a perfect landing.

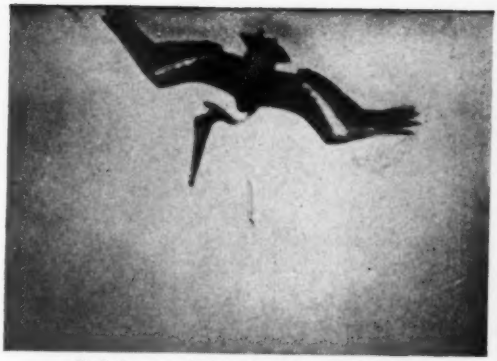
The wood ibis is apt to spend an hour or two at noontime soaring at a great height above the rookery. The birds bank steeply as they describe their great circles, the sun glinting off their white backs so that they stand out as dots of sparkling white against the deep blue sky. When their glowing backs are turned away from us, the shaded under side, reflecting less light, disappears completely and the birds become invisible until they reach the reflection point again. It is hard to realize then, as we watch them, at what a sharp angle they must be banking to reflect the sun's rays

from their backs into our eyes. Suddenly a dark pin point overhead grows into a black spot. A wood ibis is diving head first, with wings trailing out behind, close together, looking almost like a huge closed umbrella, whirling slowly as it falls.

Slowly the wing tips spread apart and, roaring through the air like a falling plane, the bird slowly levels off and coasts in to the rookery. It is hard to see how any feathers can stand the strain of such a performance.

The swallow-tailed kite, a much lighter bird, may make a different kind of dive and sudden stop. I have seen them soaring so high as to be almost out of sight when apparently the glint of a dragonfly's wing attracts the attention of one of the group. Suddenly, the kite will dive head first, with wings nearly closed but with wrists slightly forward and tips slightly away from the body. There seems to be no forward drive by the wings and no checking—a gravity dive but, no doubt, with guidance by wings and tail. Just above the tree tops, so close that a smash-up seems inevitable, the kite spreads its wings, checking with a suddenness that wrenches them upward in a whirl of ruffled feathers. Its bill closes with a loud snap on the unlucky dragonfly and a couple of quick flaps restores equilibrium. It is a breath-taking and effective, though not very graceful, ending—the only hurried or ungraceful act I have even seen a swallow-tailed kite indulge in.

At other times, if the dragonfly shifts its position, the kite will change direction during the dive so that instead of ending in a perpendicular drop it will swoop down at an angle and then zoom up in a graceful curve, picking up the insect as it passes. If an insect is on the ground, the kite will often use a foot, instead of its bill, reaching down as it skims the



Sighting a fish near the surface, a

pelican goes into a dive which would

hardly merit the word "graceful."

Eleanor Pettingill

On the take-off the brown pelicans do not have the "helicopter" action of the osprey. Hopping over the water to get up speed, they take off like seaplanes. Once in the air they are able fliers.

surface and picking up a grasshopper without pausing in its course.

Diving into the water for a fish is more ticklish work and takes plenty of finesse. When an osprey sees a fish below, it drops one wing and "peels off" sidewise like a plane before going into a vertical dive. The wings are kept partly open to control speed and direction with the help of the tail until, at the last instant, the feet shoot down past the bird's head to strike the fish, claws first, in a smother of spray.

Then we see an example of a perfect take-off. As the wings come to the surface they sweep backward on the first stroke, the outer halves turning over so that their upper sides face downward. A couple of horizontal strokes, forward and back, lift the bird straight up like a helicopter. A few feet above the surface, the angle of the wing beat shifts quickly into high with the regular flying stroke and the bird hurries off with its fish. In this take-off when the wing tips once leave the water they don't touch it again, but sweep parallel to its surface. Such a take-off, with soaking wet feathers, would probably be impossible for most land birds. The osprey's first few primary feathers are deeply notched so that the propeller feathers can separate and open up the needed slots whether wet or dry.

The brown pelican uses a different technique for its dive. Depending on its bill instead of on its claws it strikes the water head first, and with an armored and streamlined nose can make deeper dives, controlling the speed and depth of the dive with its wings. For a deep fast dive the wings are not closed against the body, but trail out straight behind the tail, giving the effect of a closed umbrella. As the bird strikes the fish it always

Allan D. Cruickshank

Wood ibises are apt to leave their rookery at noontime to go soaring.

turns, apparently catching the fish crosswise in the bill and breaking its back. My movies of diving pelicans show most of the birds turning to the left, counter-clockwise as they strike. The impulse for a left turn would naturally come from the right wing. Are most pelicans right-handed? With its light body and webbed feet the pelican has no such problem as the osprey in leaving the water, but can take off in the conventional way by hopping along the surface to get up speed.

One of the most skillful bits of maneuvering I have seen was put on by a turkey buzzard when attacked by a pair of bald eagles. As the buzzard flew past the eagle nest, perhaps a hundred yards away, one of the eagles flew toward it, not very fast at first, as if not wanting to arouse suspicion. The buzzard kept on its course but, as it approached, the eagle suddenly put on speed and the buzzard swerved sharply to avoid it, increasing its own speed at the same time. The eagle, much faster than the buzzard, rose above it by perhaps thirty feet and slightly to one side, then dove with a powerful sweep of the wings. The buzzard kept straight ahead until the eagle seemed just ready to strike, then dropped away from the eagle with a lightning flip of the body and the wing so that it seemed for an instant to swing under, and be suspended from the tip of the wing nearest the eagle which shot down harmlessly through the space just vacated by the buzzard's body.

The second eagle of the pair had now joined the pursuit and by this time was overhead and diving before the buzzard had regained balance. The buzzard righted itself, however, in time to repeat a side slip successfully. The eagles now took turns mak-

ing short vicious dives. Would it be possible for the buzzard to recover from one dodge in time for the next?

Evidently, the eagles did not figure the possibility of deflection. Their aim was to be in position to strike the buzzard in its side slip, although they must always have aimed ahead of it, to compensate for the forward flight. The buzzard, meanwhile, was putting on speed between dodges, stretching its neck in most unbuzzardlike fashion, and flying with very fast wing beats toward a palm hammock. After a couple of fast circles through the hammock, the eagles gave it up.

Another feat of dodging, where the small wing spread made the buzzard's method impracticable, was put on by a barn swallow off the cliffs of Bonaventure Island when a pair of duck hawks attacked it. The hawks would attack in nearly vertical power dives. The swallow would continue on its course until the last possible split second, then turn sideways with wildly fluttering wings, letting the hawk shoot past and zoom up to be in an overhead position almost before the swallow had regained a level flight. The hawks took turns diving, with one always in position to head the swallow away from the shelter of the cliffs. But after some hair-breadth escapes the swallow got past them and, perhaps disturbed by our boat, the hawks gave up the chase.

I have seen a duck hawk fly up to look over a trio of young ospreys in the nest. The parent osprey flew at it and the duck hawk turned tail. Whether the hawk was using its top speed may be questioned, but the osprey kept pace with fast wing beats, both elbows and wrists appearing to be considerably more bent than in normal flight, perhaps to cut down the leverage and drag of the full wing spread at such high speed. The duck hawk kept within a few hundred feet of the ocean surface. The osprey would get slightly above it then lunge forward and downward while the duck hawk shot sideways and upwards, apparently with plenty of power in reserve for a wide sweep. But the osprey would keep on, and in straightaway flight was able to follow and make several such attacks before both were out of sight.

Flying backwards might seem to be in a class with stunt flying, an ability seldom needed or used except perhaps in a fight. I have a slow motion picture of a pair of snowy egrets fighting in the air, in which one of the birds flies backwards for several strokes without losing altitude. The wing motion is nearly horizontal, forward and back, very much the same as the helicopter motion used by the osprey in its take off from the water. The chief difference is that, on the forward stroke, the wing's lower surface strikes the air a little more directly, and at a steeper angle to give more backward pressure than lift. The egret kept its body in an almost vertical position, ready to shelter its head behind its forward snapping wings, or to kick its opponent in the face if it came too near.

The hummingbird finds backward flight a useful accomplishment when it wants to withdraw its long bill from a flower. Using the same principle as the egret, but able to rotate its wing more freely, it easily becomes a helicopter.

Most birds smaller than a pigeon have such rapid wing strokes that it is impossible to study their flight without the aid of a camera. But the aerobatics and flight processes of larger birds offer you a fascinating new field of bird observation. With some knowledge of how birds fly and of the air itself you can interpret the wonderful art of flight which is so much a part of our interest in birds.

A Book-Length Feature

At a Bend in a Mexican River

By Major George Miksch Sutton

With photographs by Olin Sewall Pettingill, Jr. and Robert B. Lea

Chapter VI.

By mid-April our photographic program was in full swing. Pettingill came and went at all hours, lugging his cameras and tripods up the foothill to a mother white-fronted dove and her two callow babies, off through the palmetto scrub to a black vulture's nest he knew about, or across the river to a clump of bamboo where flocks of red-billed pigeons, bronzed cowbirds and green parakeets gathered.

The mornings were discouraging, for although the birds were active the mist was usually so dense that photography was out of the question. Day after day Pettingill would set out in high hopes promptly after breakfast, only to return in an hour or so, cramped from sitting in a tiny blind and badly dispirited. "It's this cloud, this everlasting cloud!" he would exclaim. "We'll never get any pictures so long as this cloud keeps up!" Whereupon he would grab a net and work off his fury chasing butterflies.

Meanwhile, cloud or no cloud, Bob Lea and Maclovio went on with their trimming of saplings and splitting of bamboo; the valley echoed with hammering and sawing; and the blinds rose. There were light, portable ones which could be whisked from one spot to another, others so heavy that the five of us had to join forces in raising them. We erected a small one along the shallows just above the swimming hole, near a snag from which a green kingfisher angled; a

Photographer Pettingill was not on friendly terms with a cloud.

big, clumsy one at the edge of the woods for photographing trogons and squirrel cuckoos that came out to sun themselves; a well-built, roomy one, with floor several feet above the ground, back of the house near a scrubby acacia tree; and a wobbly, three-legged one almost twenty feet high, up-river a quarter of a mile, under the nest of a pair of rose-throated becards. These birds were hardly as big as catbirds. The male was gray, with carnation-pink throat, the female tan, with gray crown. The nest was a ball of moss a foot and a half in diameter swinging at the tip of a leafless branch sixty feet above the river's edge.

We had our troubles at this becard's nest. Raising the heavy tripod took brawn and team-work. The platform for the photographer was a piece of iron roofing dragged from the house. Getting this, the blind itself, and finally Pettingill and his camera up to their lofty position required all the manpower we could muster. Fortunately, the tower settled properly in the wet gravel rather than toppling over. How gay the little becards were as, squealing and sputtering, they flew in with fresh loads of moss; how quite the opposite was the photographer who, hunched up and ready for work at last, looked grimly down at us!

Pettingill's job was to go from blind to blind getting what pictures he could. The rest of us helped by keeping out of his way and by finding nests. We found a great many, too; but it was astounding how many of them could not, for one reason or another be photographed.

There was, for example, a red-crowned parrot's nest which I happened to find as I was shooting swifts along the river. I had just missed a swift—as usual—when out from a hole high in a cypress flew a squawking parrot. Not being sure there was a nest, I returned the following day to whack at the tree with a stick. At the second rap the parrot stuck her head out. With the aid of my binoculars I read sharp disapproval in her orange eyes. Elated over the possibilities, I showed this nest to Pettingill. My reward was a hostile look. "What do you expect of this camera, anyway?" he snorted. "That nest's a mile high!" The parrot, sensing that danger was not imminent, pulled in her head.

And so it went. A Veracruz ivory-billed woodpecker's nest was so deeply shadowed that color photography was impossible. A green kingfisher's hole was far down over a bank along a deep, swift part of the river. The entrance to a mot-mot's burrow was completely hidden by roots, the whole place being dark as a cellar.

Pettingill and I didn't get along very well together, photographically speaking. I was a great believer in strolling about with camera cocked,

ready to fire away at any bird that came along. He didn't approve of that method at all. He was what I called a "tripod artist"—an advocate of much paraphernalia and strict, thoroughly memorized procedure. The simple fact was, of course, that he was a photographer and I wasn't. But how we argued! One evening the disagreement waxed so fierce that Lea and Warner withdrew from the conversation, giving each other a long and knowing look.

Pettingill obtained a splendid series of photographs at his blinds. He made good use of his time, too, for he jotted down notes as he waited. He observed, from start to finish, the building of an Alta Mira oriole's nest. The completed pouch was tough, symmetrical, and well over two feet deep. He was witness to a heated battle between a pair of golden-fronted woodpeckers and a pair of masked tityras. The latter, aggressive birds with gray, black and white plumage, and naked raspberry-red faces, were determined to use the woodpecker's newly dug nest as their own. But the woodpeckers, even after four days of wrangling, would not yield, so the tityras finally withdrew.

The blind near the little acacia tree back of the house was a center of great activity. Here Pettingill, hidden by dull green cloth, had but to turn his head to observe the Alta Mira oriole as it worked, the fighting woodpeckers and tityras, a pair of white-eyed vireos which must have had a nest almost underneath him, several Inca doves which fed along the paths, and, most interesting of all, two pairs of flycatchers which nested side by side in the top of the thorny tree.

These flycatchers belonged to wholly different species. One pair were Derby flycatchers—yellow-breasted, rufous-backed birds about the size of robins, but squarer of shoulder and bigger-headed. They had a great dome- or oven-shaped nest, with entrance at the side. The second pair were Giraud flycatchers, considerably smaller birds, but much like the others in color. Similar as the two species were in general appearance, they were very different in character. The former was positive, dominant, almost lordly in bearing. Its cry was a loud, strident *geep, geep career!* that rang across the valley. It announced every hawk and brown jay that visited the Rancho buildings and was intolerant of most small birds that came within ten yards of its nest. It was, indeed, a sort of policeman. The latter was fidgety, unstable and shy by comparison. Its cries were startled cheeps, like those of a lost chick. It perched uncertainly on the outermost twigs of the acacia, looking about with half-frightened expression as if conscious of being in the wrong place. Toward the Derby flycatcher its attitude was curiously sycophantic. Fluttering its wings and cheeping loudly as the larger bird swooped in, it seemed to acknowledge itself the weaker and to beg for permission to stay. Its bulky, dome-shaped nest was about six feet from that of the larger species!

This is anthropomorphic reporting, of course; but what is a man to do when his purpose is to make other human beings see and feel what he has seen and felt? He is not writing for birds. He is obliged to use words, not whistles and chirps. Since he doesn't know exactly how birds feel, or what goes on in their minds, he has to set down what they seem to him to do—and let it go at that. I'm quite certain that no Giraud flycatcher, as an individual organism, ever bowed and scraped before a Derby flycatcher, acknowledging itself a miserable vassal. Whatever the

relationship may be, it is a sound and well established one of species, not of individuals, and it has contributed to, or been concomitant with, species-success. The two birds sometimes nest side by side, that we know. The Giraud flycatcher is not a *bossy* species.

The Derby flycatcher con tinues to build its great oven like nest of grasses. At leas two weeks are involved in it construction. When complete the bird may safely lay it eggs and rear its young, being protected from ground ene mies by the fierce thorns o the tree and from aerial ene mies and the intense sunligh by a thick roof. At left i the blind used in studying and photographing this bird

It does not drive away hawks. It flutters its wings when the Derby flycatcher swoops down beside it. These facts have been checked repeatedly. Equally true is it that the Derby flycatcher does not chase the smaller bird away, nor pick its nest to pieces, nor show any animosity toward it throughout the whole of the breeding season. We can't call this armed neutrality—there seems to be nothing "armed" about it. We can't call it symbiosis, for we fail to see that the Derby flycatcher derives any "good" from it aside from a possible gratification of ego. Anthropomorphism

again! We seem to have fallen victim to a disreputable habit.

Banter aside, this perfect harmony between our Rancho flycatchers *was* remarkable. It is known that grackles will build their nests among the coarse foundational sticks of an osprey's eyrie, and that barn swallows will nest within six feet of a cow. In cases of this sort the species do not compete for food or for anything else. In a sense they belong to wholly different worlds. But who ever heard of kingbirds and crested flycatchers nesting side by side in an apple tree, or robins and wood thrushes sharing a small maple? The solemn fact is that most familiar dooryard birds of the eastern United States fight like cats and dogs over their nest territories from summer's beginning to end.

But if this profound understanding between two species of flycatchers is in any way challenging to the imagination, what are we to say of the relationship existing between them and certain other organisms which inhabited their home tree? That doughty little acacia harbored a huge colony of ants, furnishing them with big hollow thorns in which to lay their eggs, and food for young ants in the form of tiny, fruitlike Beltian bodies borne on the margins of the composite leaves. The ants, as if grateful for this assistance, poured forth in battle array whenever the tree was so much as touched by a horse, cow or human being. They bit savagely, too—that we learned from personal experience. But to the two pairs of flycatchers—to four lively, hungry, insectivorous birds—they paid not the slightest attention. Pettingill was frankly puzzled. Not once did he see a flycatcher eating an ant, nor an ant biting a flycatcher. He felt sure that no mammal or snake could climb to the two nests without being bitten by ants. He suspected that the flycatchers helped the ants, somehow, in return—perhaps through catching ant-eating insects or warding off ant-eating birds. But he wasn't sure. He had serious misgivings. All he could do, under the circumstances, was keep his mind open and go on photographing what he saw.

We have not yet come to the end of our story, however. While Pettingill was busy with his ants and flycatchers, what should suddenly appear but a pair of hooded orioles. They flitted about, sometimes scolding him roundly as he went into or came out of his blind. They were tolerated by the flycatchers so long as they stayed out of the acacia. This worked no hardship on them, for all they wanted was the blind. The female became something of a nuisance, for she spent much of her time inside, fluttering about Pettingill's ears. Finally she began hauling in long palmetto fibers, entering through openings provided for lenses. Pettingill pinned the cloth shut with safety pins, but the oriole, wholly undaunted, forced her way in and out through the narrow slits, and went on with her nest. She swung it from the blind's cloth roof, almost over Pettingill's head, punching her sharp bill through the fabric and doing a neat job of sewing. Wonder why she didn't use some of Pettingill's hair?

There was an amused discussion of the oriole problem at meals. Various suggestions were made. Pettingill tried moving the blind, but the oriole moved too. There seemed to be no way to evict her, so, since nobody wanted to kill her, she stayed. Thus Pettingill and his orioles, his two pairs of flycatchers and his acacia full of biting ants managed to get on well together despite differences of ancestry, language and upbringing. A melting pot indeed was our Rancho!

(To be continued)

THE PRESIDENT'S *Report to You*

DDT versus insects and flowering plants • Airplanes and natural resources • Some ten year comparisons in NAS figures

A RECENT article in the *Saturday Evening Post* would lead the public to suppose that the new chemical, DDT (dichloro-diphenyl-trichloroethane), a powerful insecticide, is going to be the greatest boon to mankind that ever came down the pike. True, the Army and Navy have used it to apparently excellent purpose in eliminating risk of malaria at far-flung points in the southwest Pacific, and there is no question but that limited use for temporary war purposes may be very advantageous and definitely in order.

DDT VS. FLOWERING PLANTS

When, however, it is proposed that this chemical be distributed by airplane over large areas in the United States and Canada, as a means of controlling such insects as the spruce budworm, it is time to call a halt and ask whether, before undertaking any such projects, it would be wise and necessary to find out by experimentation what the effect might be on vegetation and wildlife, and consequently on human beings, indirectly if not directly. Your attention is invited to the fine article by Herbert F. Schwarz in this issue of the magazine, in which among other things he points out that widespread use of DDT would probably exterminate the pollinating insects and thus exterminate flowers and fruits. The potentialities of destruction are certainly enormous.

INSECTS VS. TREE PLANTING

The subject is rather complex. For example, we understand that most of the consequential damage by the spruce budworm is in man-planted solid stands of spruce. There is, of course, a great deal of doubt expressed today as to whether the foresters' usual recommendation policy of the past generation, involving solid plantings of one kind of tree rather than plantings of mixed species may not lead to all sorts of damaging complications. Perhaps, then, the sound solution of this particular phase of the problem lies in discontinuance of the practice of solid plantings of one kind of tree, rather than in the destruction of insects by airplanes spraying chemicals.

COOPERATIVE EXPERIMENTATION

It is good to be able to report that the agencies of the federal government most interested in this matter seem to be quite aware of the potentialities of damage. The Bureau of Entomology of the Department of Agriculture and the U. S. Public Health Service are particularly interested. The former has invited the Forest Service and the Fish and Wild-

life Service to participate in experimentation by stationing one or more observers at the several points where, on a total of some 5000 acres in the United States and Canada, the effect of spraying DDT by plane will be carefully recorded this spring and summer.

Your Society has accepted the invitation extended to it by the Fish and Wildlife Service to cooperate through such stationing of observer or observers. We have urged that time be allowed before the experimental sprayings to sufficiently inventory the vegetation and wildlife, in order that "before and after" comparisons may be available. We have also urged that federal and state governments not proceed with projects involving spraying of DDT over the countryside, for any control purposes, until the findings of the experimental projects are known and have been carefully considered.

One of our directors, an ardent gardener, recently received communications from five nationally known seed houses, and it is encouraging to learn that all five of them stated that the use of DDT for control of garden insects is still in the experimental stage, and that in their opinion its use might be seriously damaging, especially to pollinating insects.

AIRPLANES AND NATURAL RESOURCES

General use of the airplane after the war is going to present quite a number of new problems in the protection of natural resources. For example, will it be wise to permit the landing of private planes, or any planes for that matter, within the boundaries of national parks, national forests or other federal lands? As many readers doubtless are aware, the national parks and forests are honeycombed with private land holdings, and there will surely be incentive to many such individuals to attempt to lure business of visitors landing in planes. This will present an especially difficult problem where such private checkerboarding of ownership may exist within or close to wilderness areas.

Further complication exists where there are lakes and streams on which planes could land, for the national park and forest administrations do not have legal jurisdiction over navigable waters. Any enforcement with regard to the use thereof is the responsibility of the Army Engineers. This entire subject is one which deserves most careful consideration, and the National Research Council has appointed an advisory committee on which, among others, your president has been requested to serve.

NOMINATING COMMITTEE AT WORK

The official nominating committee, to recommend a slate of directors for consideration by the members at the annual meeting next October, has been appointed by the Board of Directors and will again this year consist of Mrs. Robert C. Wright of Haverford, Pa., Chairman, Mrs. O. M. Stultz of Los Angeles, Calif., and Walter Elwood of Amsterdam, N. Y. We owe a vote of thanks to the members of this committee for their aid in giving this important matter very careful consideration. Under the provisions of the bylaws, additional nominations for directors may be made on petition, in writing, of any fifty members and may be additionally made by individual members present in person at the annual meeting. The date of the meeting has been set by the Board as Tuesday, October 23, 1945, and it will be held as usual at Audubon House in New York City, probably at 9:30 A.M. Formal announcement of the meeting will be sent to all

J. 4.

Will bird songs in our forests soon be silenced?

members, with proxies, well in advance thereof.

NAS PROGRESS REPORT

The other day we happened to look at some figures of progress of various activities of the Society over the past ten years. Members will doubtless be glad to learn that, in the ten-year period ending June 30, 1944, the receipts from membership dues increased from $16,995 to $31,169, and that in the first seven months of this fiscal year there has been an 18.6 per cent increase in the total number of members over that prevailing a year previously.

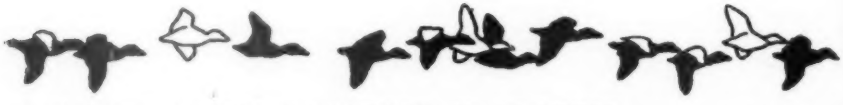
The dues received from members of Audubon Junior Clubs has in the ten-year period grown from $10,357 to $27,664, this representing an enrollment in the 1943-44 school year of over 276,000 children as compared with 103,000 in the school year 1933-34.

Receipts from magazine subscriptions, not including the copies sent to members, have increased from $3,726 in the first year in which the magazine was owned by the Society (1934-35), to $8,535.

Service department sales increased in the ten-year period from $5,673 to $25,145.

More recent activities for which, of course, no ten-year comparisons are available, include the lecture program, with its Audubon Wildlife Screen Tours, and the distribution of the materials of the School Nature League; these show gratifying growth, and the gross lecture fees for the current fiscal year will double those of the preceding year.

Now we are far less concerned with these figures than with what they represent when translated into terms of kinds of activity and the spreading of the influence of the Society. We are sure that, in the last analysis, this growth, and nationwide increase in interest and participation, is due primarily to the good will and aid of our members in carrying to their friends and their communities helpful word as to the value of the Society's work.



LITERARY NATURE QUIZ by Anna C. Ames

How well do you know birds immortalized in poetry? Give yourself 5 points for each correct title and 5 for the name of the poet. *Turn to page 128 for answers.*

1. "Curlew calling down the slack
   When gray rains are falling. . . ."
2. "There is a singer all have heard."
3. "He clasps the crag with crooked hands."
4. "I thought the sparrow's song from heaven,
   Singing at dawn on the alder bough . . ."
5. "I am persuaded that grackles are birds."
6. "Across the narrow beach we flit,
   One little sandpiper and I."
7. "I heard a wood thrush in the dusk
   Twirl three notes and make a star."
8. "In mirth he mocks the other birds at noon."
9. "Hail to thee, blithe spirit!"
10. "I longed to hear a simple strain—
    The wood notes of the veery."

THE NATURE OF THINGS

COMMENTS ON THE NEW NATURE LITERATURE — RICHARD H. POUGH

CONSERVATION

CONSERVATION OF WILDLIFE.

Hearings Before the Select Committee on Conservation of Wildlife Resources, House of Representatives, 78th Congress Second Session, November 17, 27, 28 and 29, 1944. U. S. Government Printing Office, Washington, D. C. 6 x 9 inches, 500 pp., paper covers. 1945.

This 500 page report contains statements to the committee from the Bureau of Reclamation, the U. S. Army Engineers as well as the regular wildlife agencies such as the Fish and Wildlife Service, Forest Service, Soil Conservation Service and the National Park Service. It also contains 116 pages of reports from the states concerning their work, especially the part done with Pittman-Robertson funds.

CONSERVATION OF WILDLIFE.

Report of the Select Committee on Conservation of Wildlife Resources, House of Representatives, House Report No. 2097, 78th Congress, Second Session. 6 x 9 inches, 39 pp., paper covers. 1945.

A brief document which sums up the salient points contained in the detailed reports made to the committee during the course of its 1944 hearings.

WILDLIFE CONSERVATION.

Report on the Progress of Wildlife Restoration and Management of the Special Committee to Investigate the Conservation of Wildlife Resources, U. S. Senate, 78th Congress Second Session. U. S. Government Printing Office, Washington, D. C. 6 x 9 inches, 111 pp., paper covers. 1944.

The bulk of this report is statistical. It has 90 pages of straight tables summarizing the important statistics having to do with wildlife on federal lands. The history of some of the developments in the conservation field since the Special Committee was formed in April 1930 is touched upon briefly in the introduction.

DUCK POPULATIONS AND KILL.

By Frank C. Bellrose, Jr. Illinois Natural History Survey, Urbana, Ill. 6¾ x 10 inches, 45 pp., illus., paper covers. 1944.

Anyone interested in waterfowl conservation problems will want this report. Using graphs the author shows what the relation has been between hunting season dates and the flight of each duck species through Illinois. He reviews briefly the waterfowl story since 1900 and evaluates the probable effect of the present hunting regulations on

the population of each species. Especially interesting are the graphs showing total hunter kill week by week by species during 1940, '41 and '42.

WATERFOWL HUNTING IN ILLINOIS, ITS STATUS AND PROBLEMS.

By Frank C. Bellrose, Jr. Illinois Natural History Survey, Urbana, Ill. 8½ x 11 inches, 35 pp., paper covers. 1944.

As the waterfowl have recovered, the number of duck hunters has steadily increased. It is, as a result, becoming increasingly difficult for many sportsmen to find a place to hunt. Illinois affords a good example of this problem which is one that will become acute in many areas after the war. On one public shooting ground there was a hunter for every .95 acres on the opening day in 1942 and they shot about 90 per cent of the birds present (chiefly coots). The presence of a 3160-acre goose refuge in the southern tip of the state has greatly enhanced the value of over 15,000 acres of adjacent farm land because of the goose shooting fees which can be obtained from hunters.

NATIONAL CONSERVATION POLICY CONFERENCE, JANUARY 1944.

National Audubon Society, New York 28. 6 x 9 inches, 105 pp., paper covers. 1944. Free.

This is a transcript of the reports submitted during a three-day conference, by the Fish and Wildlife Service, National Park Service, Bureau of Indian Affairs, Grazing Service, Forest Service, Soil Conservation Service, Bureau of Reclamation, General Land Office, Bureau of Public Health and the Army Engineers, to a group representing the various non-governmental organizations interested in the problem of conservation. The reports deal largely with the impact of the war on the work of the agencies and their postwar plans. There was some question and answer discussion all of which is covered in full.

REFERENCE AND TEXTS

A SOURCE-BOOK OF BIOLOGICAL NAMES AND TERMS.

By E. C. Jaeger, Charles C. Thomas, Springfield, Ill. 6½ x 9¼ inches, 256 pp., 96 figures. 1944. $3.50.

A dictionary of 12,000 elements used in the synthesis of "Latin" names for plants and animals. The derivation and meaning of each is given, followed by several examples of its use in actual biological nomenclature.

SPEED IN ANIMALS.

By A. B. Howell. University of Chicago Press, Chicago, Ill. 6 x 9 inches, 270 pp., 55 illustrations. 1944. $4.00.

A technical book dealing with the anatomy as well as the dynamics of locomotion in each of the vertibrate groups as they have evolved from their earliest known forms. The changes and modifications, which the various body structures involved in locomotion have undergone as animals have become adapted to various types of life, are described in considerable detail.

ECOLOGY AND MANAGEMENT

MICHIGAN FOX SQUIRREL MANAGEMENT.

By Durwood L. Allen. Department of Conservation, Lansing, Mich. 6½ x 9¼ inches, 404 pp., 212 illus. 1943.

A comprehensive and thoroughly readable report based on a statewide study. The local history of both the fox and the gray squirrel is traced from presettlement days to the present. Its life history, relations with man and management are all discussed. The numerous photographs, graphically presented statistics and amusing cartoons are all to be commended as are the terse summaries at the end of each chapter.

HANDBOOKS AND GUIDES

AMPHIBIANS AND REPTILES OF THE CHICAGO AREA.

By Clifford H. Pope. Chicago Natural History Museum, Chicago, Ill. 5½ x 8½ inches, 275 pp., colored and black and white illus., paper covers. 1944. $1.75.

Fifty-two species occurring in the Chicago area (the fifteen counties around the southern end of Lake Michigan) are covered. Each is illustrated so only recognition characters are given in the text. The book is notable and useful far beyond the limits of the Chicago area, because of the detailed information it contains on the life history of many of the species. One plate shows six different color patterns which were assumed by the same tree frog.

HANDBOOK OF THE MOSQUITOES OF NORTH AMERICA.

By Robert Matheson. Comstock Publishing Co., Inc., Ithaca, N. Y. 6½ x 9½ inches, 314 pp., fully illus. 1944. $4.00.

A new, completely revised edition of the standard book on North American mosquitoes. Part I consists of 86 pages of interesting material on their anatomy, biology and relations to man, the diseases they carry, control methods and study techniques. The remainder of the book is devoted to a systematic account of all the species found in North America—140 in all. It gives full keys, detailed descriptions and a brief summary of the known range of each, its breeding grounds and life history.

BIRDS OF THE SOUTHWEST PACIFIC.

By Ernst Mayr. The Macmillan Co., New York.

5¼ x 7½ inches. 316 pp., 3 color plates, 15 black and white text cuts. 1945. $3.75.

Designed for use in the field as a guide to the identification of any bird one might encounter on any of the islands from the Tonga and Samoa groups to the Palau Islands and the Marianas. The first part deals with the various bird groups in systematic order and contains detailed descriptions of the most important diagnostic field characters of each of the widely distributed species. The second part is geographically divided by island groups and indicates which of the previously described species occur on each island. It also contains the descriptions of the birds found only in the island group under discussion. Any service man stationed in the area would probably enjoy having this book whether he had ever been interested in birds or not.

REGIONAL

ALASKAN BIRD TRAILS.

By Herbert Brandt. The Bird Research Foundation, Cleveland, Ohio. 8 x 10 inches, 464 pp., 12 color plates, 28 photographs. 1943. $10.00.

This is the story of an expedition to the rich breeding grounds of the Hooper Bay area in the great delta of the Yukon River. It is told chronologically, starting from Seattle on March 8, 1924. Traveling via Fairbanks, the last part of the journey was made by dog team down the Yukon to Bering Sea which was reached on April 28, while the area was still snow covered. Here they stayed until the end of June, witnessing an extraordinary spring migration and studying the nesting habits of some 60 breeding species. There is a 134-page appendix in which all observed species are treated in systematic order.

CUBAN ORNITHOLOGY.

By Thomas Barbour. Nuttall Ornithological Club, Cambridge, Mass. 8¾ x 11 inches, 144 pp., 2 photographs. 1943. $4.00.

An annotated list of the 297 birds which have been recorded from Cuba. According to the author many of the island's finest and most interesting species are disappearing with tragic speed.

CANADIAN BIRDS.

By L. L. Snyder. Canadian Nature Magazine, Toronto, Canada. 6 x 9 inches, 32 pp. Illus., paper covers. 1944. 35 cents.

This booklet covers 75 common Canadian birds grouped under 15 geographical or habitat headings. Each group receives a full page of text opposite which is a page of pen and ink sketches by T. M. Shortt showing the five species.

THE PACIFIC WORLD.

By Fairfield Osborn. W. W. Norton & Co., New York. 6 x 9 inches, 218 pp., 9 color plates, 8 maps. 1944. $3.00.

This book covers Australia, New Zealand, Japan and New Guinea as well as the smaller islands. The first part deals with the general climate, history and inhabitants, both human and otherwise, of the whole area. Then the geography of each regional group and its components is discussed in detail.

JUVENILE

THE SQUIRREL BOOK.

By Phyllis Kelway. William Collins, Sons & Co., New York. 5¾ x 8¼ inches, 78 pp., illus. 1945. $1.00.

A charmingly written English story about two young squirrels that were reared as pets and remained tame after their release. Although the squirrels provide the main interest, many other wild animals are drawn into the story. The species are, of course, all British.

HISTORY AND BIOGRAPHY

MEN OF SCIENCE IN AMERICA.

By B. Jaffe. Simon and Schuster, New York. 6 x 8¾ inches, 600 pp. Illus. 1944. $3.75.

A history of the development of science in America. The story of the lives and work of our leading scientists is interestingly integrated with the political and economic forces of their times. All branches of science are given consideration and the work of several hundred men receives recognition.

THE BOOK OF NATURALISTS.

By William Beebe. Alfred A. Knopf, New York. 6 x 8½ inches. 499 pp., 3 plates. 1944. $3.50.

An interesting anthology in two parts. The first is a source book in early natural history from the cave drawing of early man through Aristotle to Thoreau. The second part covers the writings of modern naturalists from Darwin to contemporary nature writers.

RAYMOND L. DITMARS—HIS EXCITING CAREER WITH REPTILES, ANIMALS AND INSECTS.

By L. N. Wood. Julian Messner, Inc., New York. 6 x 9 inches, 272 pp. Illus. 1944. $2.50.

Although this biography won a children's literature contest, it will be of equal interest to adults. Mrs. Wood has produced a thoroughly enjoyable account of the life of the famous "snake man" of the Bronx Zoo, who dedicated his life to furthering a better public understanding of and appreciation for reptiles of all sorts.

SOUTH AMERICA CALLED THEM.

By V. W. von Hagen. Alfred A. Knopf, New York. 5¾ x 8½ inches, 311 pp., illus. 1945. $3.75.

This book covers the travels and experiences of four great naturalists who played an important part in making South America known to the rest of the world—La Condamine, Humboldt, Darwin and Spruce. It starts with the expedition of the French Academy of Sciences in 1735 and ends with Spruce's work with the cinchona tree in 1859.

GENERAL

GETTING THERE—THE PSYCHMOTIVATEASE.

By R. M. Yergason. Published by Mrs. A. R. C. Yergason, West Hartford, Conn. 5¾ x 8½ inches, 40 pp. Illus., paper covers. 1943. $1.00.

The author describes his work as "a text-book in zoology in the form of a poem with pen and ink sketches." The poem traces life—form by form—from the most primitive to man. Each stanza is accompanied by an appropriate sketch. A curious and amusing booklet.

GAME BIRDS OF AMERICA.

By Lynn Bogue Hunt, Field and Stream Magazine, New York. Twelve color plates on 13 x 16 inch paper, 18 page booklet. 1944. $5.00.

The thirty-nine species of game birds portrayed in these attractive paintings are worked into landscape backgrounds which show the various habitats in which these birds occur. One of the finest shows five turkey hens and a gobbler. Unfortunately some of the others seem a little over loaded with birds. A booklet accompanies them which tells something about both the artist and his subjects.

AUDUBON MAGAZINE'S NINTH BREEDING BIRD CENSUS

REPORTS DUE SEPTEMBER 1

Our Ninth Breeding-Bird Census will be printed in the November-December issue this year. Instructions remain essentially the same as last year (see *Audubon Magazine*, May-June 1944, pp. 187-189). In the event that this issue is not available, we will be glad to send mimeographed copies to anyone contemplating initiation of a breeding-bird census. Planning space is a real problem these days, and it would be a great help if *all* census-takers would notify us as promptly as possible of their intention to participate in this project in 1945.

SELL YOUR PHOTOS

Why not let others see and enjoy your wildlife photographs? Our Photo Service Department has been organized to help publishers and advertisers obtain good photographs of wild plants and animals. Many photographers are letting their hobby pay its own way. Why not file with us for sale your best material?

We need good material of the very commonest birds, trees, flowers and animals of all sorts. Just send us glossy prints, 8 x 10 size is preferable, and we will do the rest.

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NATIONAL AUDUBON SOCIETY
1006 Fifth Ave., New York 28, N. Y.

A New Wild Flower Booklet

Every nature lover will want a copy of **Canadian Wild Flowers.** This booklet contains deluxe reproductions in full color of fifteen wild flowers, painted for Canadian Nature Magazine by Barrie Rennie, noted Canadian artist. The subjects are Skunk Cabbage, Arbutus, Hepatica, Dutchman's-breeches, Adder's-tongue, White Trillium, Jack-in-the-pulpit, Blue Violet, Showy Lady's Slipper, Yellow Lady's Slipper, Twin-flower, Wild Rose, Columbine, Pitcher Plant and Fringed Gentian. When framed the pictures make ideal gifts or decorations. A simple frame of natural wood, 9" x 12", with a black inner edge and cream mat, is effective. Passe-partout framing is satisfactory if well done. A set should be displayed in every classroom or library.

Canadian Nature Magazine

Canadian Nature presents in popular form brief, interesting, up-to-date information on subjects in all the natural sciences. It contains questions and activity ideas, art work and projects for each season. It is written and illustrated by authorities. The magazine enjoys wide United States school use. The articles are suitable to the whole of North America. There are subscribers in 48 States. **Canadian Nature** is issued in September, November, January, March and May. The five numbers contain approximately 200 pages, 90 articles, 35 color plates, 160 photographs, 220 figure drawings. Annual index in November. **Canadian Nature** was founded in 1939 as a memorial and is conducted as a non-commercial public service. The press run exceeds 28,000 copies of each issue.

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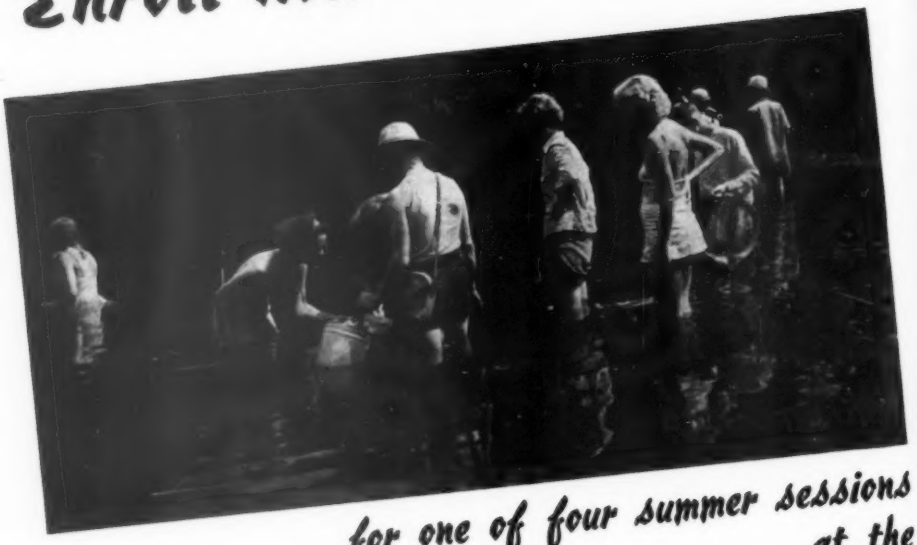

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The 280-acre woodland sanctuary in Greenwich, Connecticut, with its diversity of wildlife habitats, offers an unusual opportunity to see the succession of plants and animals through every stage from bare rock to mature forest. Fields, streams, lakes, marine shore and forests are studied as ecological units and you learn to think of plants and animals as the product of definite environments.

A spacious museum with a well-equipped library and workshop serves as headquarters. Students sleep comfortably in frame buildings. An able dietician will provide an abundance of simple, well-cooked foods. An excellent staff of instructors will be under the direction of Dr. Richard L. Weaver, Educational Director at the Center.

UBON NATURE CENTER

GREENWICH, CONNECTICUT

OURSE FOR THOSE between
and 25 years of age: June 25
rough July 7 — Enrollment is
nited to those who wish to train
or camp counselor positions.

COURSES FOR THOSE of 20 years of age and over in three sessions: July 9 through July 21, July 30 through August 11, August 13 through August 25.

TUITION of $70 includes board and lodging.

Audubon Nature Center summer sessions for 1945 are designed to assist teachers, nature counselors, youth leaders, garden club members, conservation chairmen, librarians and all others with a professional or hobby interest in a better understanding of plants and animals and the wildlife communities which they form.

Enrollment is limited. In order to avoid disappointment, write immediately for an application form and descriptive folder.

NATIONAL AUDUBON SOCIETY
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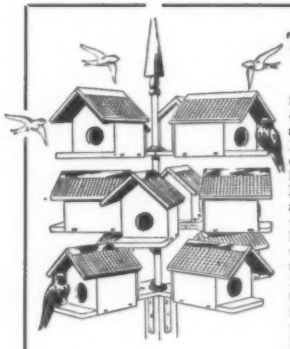

THE MARTIN COLONY

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Conventional type Martin Houses (weighing 50 lbs. or more) are very expensive to erect, requiring special facilities and gear not usually part of home or farm equipment, and 3 or 4 men a day or more. Our Martin Colony, as it is in sections, is simple and easy to attach to top of post or verticle by one man in a couple of hours. Therefore cost in place, less than usual type. Each half section weighs only 8 pounds.

No. MC1, Starter Colony, price..... $20.00
No. MC2, Add-a-Colony, price..... 20.00

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LETTERS

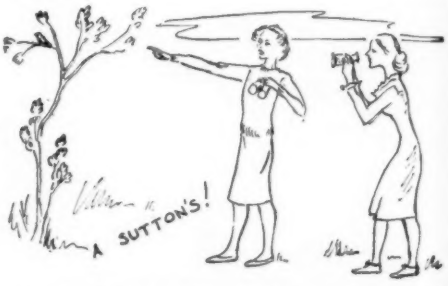
From the Editor:

The "idea" folder is beginning to fatten up with letters from readers containing excellent article suggestions. So far, requests for biographical sketches of naturalists and nature writers lead the list. Writes P. H. W. Bachmann, of Brooklyn:

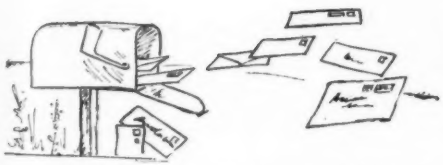
"Please, by all means, continue in every issue one article of the type of *Gilbert White*. You will be doing a service to your literary nature-lovers by uncovering little known masters of nature writing. White was known to me, of course, but not some of the facts of his life, which I found interesting."

So this month you have Thoreau, by the Secretary of the Thoreau Society; next month John Muir, by Alan Devoe. Henry Beston promises an article on Henry Walter Bates (nineteenth century English naturalist and geographer). As for contemporaries, Edwin Way Teale is planning a picture-personality story on Ludlow Griscom, that indefatigable field ornithologist who starts out on bird trips at 2 A.M. (Better take plenty of flash bulbs with you on *that* expedition, Mr. Teale!) Louis Halle, Jr. is also working on biographies of several contemporary conservationists—more about that in a later letter.

Requests for quizzes and mind-teasers have come from a number of readers. Mrs. Ames, of Illinois, sent the one on page 116 "just to start the ball rolling."



Usually, there is quite a lag between an editorial idea and a finished manuscript, but a new record in speed was set last January. Mrs. Brownsey asked for an article on Sutton's warbler. Her letter was forwarded to the Major, who scribbled in the margin: "Can't do it. Try Maurice Brooks." So I scribbled in the margin: "How about it?" and sent to Mr. Brooks, Associate Professor of Wildlife Management at West Virginia University. The letter came back with another scribble: "Can do. Give me a couple of days." Three days later a manuscript arrived entitled "George Sutton and his Warbler." (Please note that the correspondence established something of a record in saving paper



and stenographic time!) We hope to publish the article in the next issue.

That there can be tragedy in handling firearms is something about which we have all been warned. Now I've learned that there can be danger, also, in handling *just a picture* of a gun. Last issue on page 12, we published a photograph of Donald Culross Peattie holding what we described as an "old flintlock." Our readers have written in to correct the error—it is a double-barreled shotgun! I blush with shame—but to let you in on a secret—my principal interest in the picture was the handsome likeness of Mr. Peattie. (No doubt, all feminine readers shared this interest—the correcting letters have been from men only!)

Among our authors, this issue, are several new to *Audubon Magazine*. Dave Cook (that's his name for what he terms "popular writing") may be known to many of you as David B. Cook, author of many articles appearing in technical wildlife journals. John W. Scott is Professor of Zoology at the University of Wyoming. James Bond is Associate Curator of Birds of the Americas at the Academy of Natural Sciences of Philadelphia. His specialty is birds of the West Indies (about which he has written a book, published in 1936 by the Academy.) Later, he is going to write something for us on the need for bird conservation in the West Indies.

Herbert F. Schwarz, champion of insects and specialist on bees, is a good example of what can happen to a man, once bitten by the bug of natural history! Some years ago Mr. Schwarz was an editor at G. P. Putnam's Sons. He thought it would be a good idea to have Frank E. Lutz write a guide to the insects. Dr. Lutz wrote the book—but in the meantime he began taking his editor off on insect expeditions. Mr. Schwarz was completely captivated—pretty soon he was editing *Natural History*, getting deeper and deeper into his new field until now he is Acting Chairman of the Department of Insects and Spiders at the American Museum of Natural History.

ELEANOR A. KING

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To the Editor:

Congratulations on the November-December issue of the *Audubon Magazine*.

I have gone through every issue for the XLVI years (whatever number of years that means), and this is the best issue I have ever seen.

ALEXANDER W. BLAIN, M.D.

Detroit, Mich.

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To the Editor:

Your two scaup duck, in convoy, eyes cocked to starboard signalled to me "read every one of these 64 pages," sure I did, HURRAY for your heartening report on Everglades National Park, approximately 1/33 the size of our entire North Carolina, but better than its size is its vast scope in befriending wildlife.

Everglades and Rainey challenge all of us to establish more sanctuaries. Dr. Pearson helped me to organize four bird sanctuaries here; 1100 acre private estate, 700 acre county sanitorium, 350 acre orphanage, 78 acre country club, all developing, all prove the wisdom of Dr. Pearson's counsel to me five years ago, "provide the protection and the birds will do the rest."

Kindly thank Alan Devoe for his welcome classification of us "ornithologically illiterate" as "Naturemen," we, the simple folk to whom "Mom Nature, that kind old nurse, whispers secrets of the universe."

HENRY MAGIE
North Carolina Bird Club
Winston-Salem, N. C.

To the Editor:

When I began to read about DDT in the newspapers, I started to worry because I am old enough to have seen many cure-alls started in this country. I was really startled when I received, recently, a letter from one of our leading scientists, from which I quote:

"I am greatly worried about this DDT business, and especially since the general run of biologists seems criminally unaware of its implications. I attended a meeting of the trustees of one of the leading scientific laboratories of the country recently and one of the trustees seriously proposed that after the war the *whole country* should be sprayed from the air with DDT to get rid of malarial mosquitoes. There was general approval of this cute idea and my feeble protest that such a proceeding would upset thousands of balances of nature with the most devastating effects, was greeted with contempt. We are in for a lot of trouble if these ideas spread as much as I feel they will."

What is going to happen to this country if people are permitted to explode DDT bombs haphazardly! I hope you are planning to discuss this subject in your magazine.

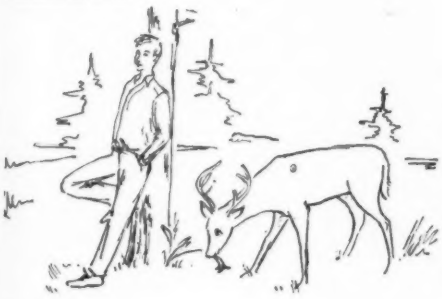
WILLIAM PROCTER
Palm Beach, Fla.

To the Editor:

I have been concerned about some of the new inventions to destroy insects and weeds. Since birds so largely subsist on insects and weed seeds, a famine may result and many birds destroyed. I trust this threatened evil may be averted.

MINNA D. STARR

Baltimore, Md.



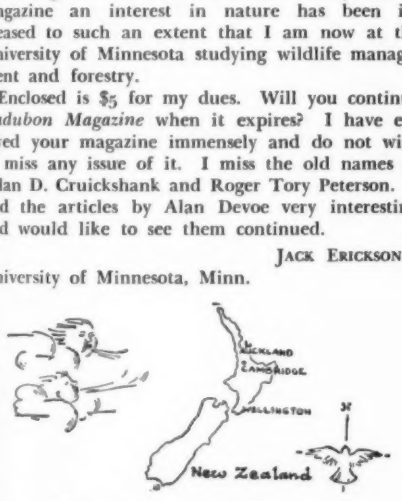
To the Editor:

Through the National Audubon Society and its magazine an interest in nature has been increased to such an extent that I am now at the University of Minnesota studying wildlife management and forestry.

Enclosed is $5 for my dues. Will you continue *Audubon Magazine* when it expires? I have enjoyed your magazine immensely and do not wish to miss any issue of it. I miss the old names of Allan D. Cruickshank and Roger Tory Peterson. I find the articles by Alan Devoe very interesting and would like to see them continued.

JACK ERICKSON

University of Minnesota, Minn.



To the Editor:

The generous gift of copies of your magazine by Mrs. C. D. Mallory is very much appreciated here. We are not able to get any overseas publications as we are not allowed to send any money out of the country for anything, so you can see what a joy it is to us to obtain such delightful and instructive literature.

Apropos of conservation, here is a small paragraph of what happened during the week of November 17 to 23. Tuesday appeared a very sullen and threatening day and it was dark enough at 5:30 p.m. to turn on the lights which is nearly an hour and a half before the normal time at this

AUDUBON

Living Memorials

THERE are few normal human beings who have not on occasion dreamed of a memorial which they would like to leave to posterity . . . sometimes in their own names, but more often to keep alive and to share with others the memory of a member of the family circle or of a friend.

GOOD fortune in the choice of such a memorial attends all those who have found pleasure in an understanding of nature, who have known and understood the birds of America, the creatures of the wild, and the great American outdoors. For they have an opportunity to reflect this interest by establishing a *living* memorial, which so long as life endures on this earth, will make its manifold contributions to all mankind.

THE program of the National Audubon Society presents a number of unusual opportunities for the establishment of such living memorials. The officers and directors of the National Audubon Society will be glad to confer with anyone contemplating the establishment of a memorial, and will also welcome an opportunity to discuss the Society's needs, now or in the future, which may be met either through current gifts or bequests.

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I hereby give, devise and bequeath to the NATIONAL AUDUBON SOCIETY, in the City of New York, in the State of New York,

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LITERARY NATURE QUIZ ANSWERS

1. *Curlew Calling* by W. W. Gibson, 2. *The Ovenbird* by Robert Frost, 3. *The Eagle* by Alfred Tennyson, 4. *Each and All* by Ralph Waldo Emerson, 5. *Grackles* by Amy Lowell, 6. *The Sandpiper* by Celia Thaxter, 7. *The Wood Thrush* by Sara Teasdale, 8. *The Mockingbird* by Henry Van Dyke, 9. *To a Skylark* by Percy B. Shelley, 10. *The Veery* by Henry Van Dyke.

season. We all thought a big storm was imminent. Wednesday morning, on picking some roses for the house, I found them dingy and the leaves caked with grime. My husband said the cabbages had a blight—a reddish coating. When our newspapers came, we read that the dust from the frightful drought in Australia—1233 miles away—was in a pall over the northern part of New Zealand and people who had their washing on the line found it brown. So, though I have never been to Australia, I have walked on Australian soil.

I enclose a sample of this soil scraped from our cabbages.

MRS. GLADYS M. NICKLE

Cambridge, New Zealand.

• • •

To the Editor:

My November-December magazine is such a delightful number that I want to tell you how much I am enjoying it, especially the article "Out of the Gray Mist," by Carl W. Buchheister.

It recalled to mind the month spent at Audubon Camp on Hog Island in 1937—and the trip made to Little Green Island, August 2, on board "The Osprey" with Mr. Cruickshank in charge; Mr. Cadbury was on "The Puffin," and my first sight of a Leach's petrel, an adult bird—all a very thrilling experience. (I keep a diary hence my being able to give the dates.)

In reading the magazine articles, it is almost like a personal letter from old friends as so many of the contributors were at "The Camp."

Was especially interested in the roster of new officers.

MRS. CARRIE W. REICHMUTH

Duluth, Minn.

• • •

To the Editor:

I am a member of your Society. My son is with the Marines on Saipan. From time to time he writes me a description of a certain bird and asks me what it is. Of course, I have a very faint idea of the birds found there.

Do you happen to know of any birdman with the 2nd Marines or any of the Armed Forces on Saipan—to whom I could refer my son? It would help very much to pass the time.

A. H. FAST

4924 Rock Spring Road
Arlington, Va.

BACK NUMBERS WANTED

Our stock of the May-June 1944 and Sept.-Oct. 1944 issues of Audubon Magazine is exhausted. If you have copies which you do not want, we shall appreciate having them returned to us.

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